

# STATE OF VERMONT AGENCY OF TRANSPORTATION



## PROPOSED IMPROVEMENT BRIDGE PROJECT

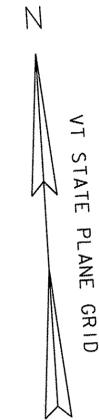
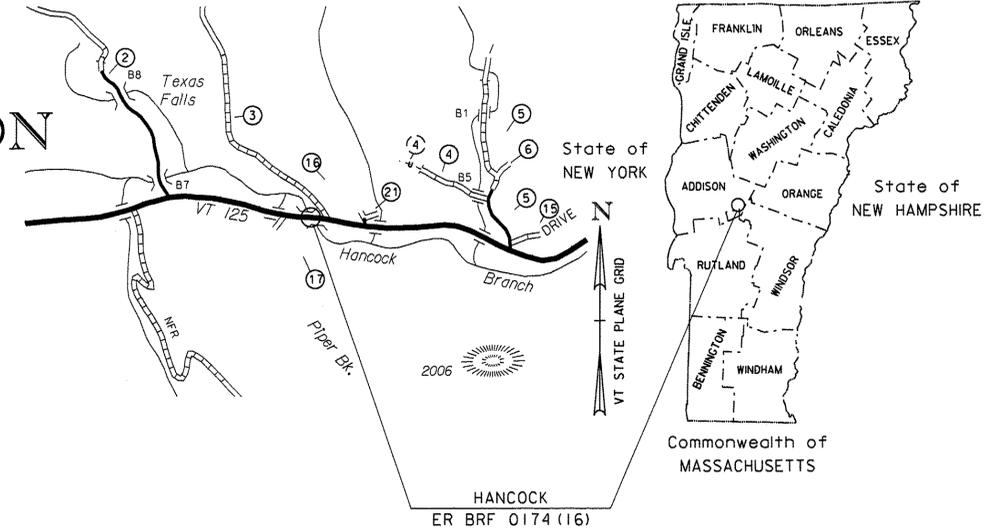
TOWN OF HANCOCK  
COUNTY OF ADDISON

ROUTE NO: VT 125, MAJOR COLLECTOR    BRIDGE NO: 23

PROJECT LOCATION: BEGINNING AT A POINT APPROXIMATELY 2.2 MILES WEST OF THE JUNCTION OF VT 125 AND VT 100 AND EXTENDING EASTERLY 275 FEET ALONG VT 125.

PROJECT DESCRIPTION: REPLACEMENT OF THE EXISTING BRIDGE WITH A NEW BRIDGE ON THE EXISTING ALIGNMENT WITH NECESSARY ROADWAY AND CHANNEL WORK.

LENGTH OF STRUCTURE: 72.66 FEET  
LENGTH OF ROADWAY: 202.34 FEET  
LENGTH OF PROJECT: 275.00 FEET



QUALITY ASSURANCE PROGRAM: LEVEL 2

### CONVENTIONAL SYMBOLS

COUNTY LINE		COUNTY LINE
TOWN LINE		TOWN LINE
LIMITS OF ACCESS		
POINT OF ACCESS		
FENCE LINE		
STONE WALL		
TRAVELED WAY		
GUARD RAIL		
RAILROAD		
SURVEY LINE		
CULVERT		
POWER POLE		
TELEPHONE POLE		
TREES		
CONTROL OF ACCESS		
PROPERTY LINE		
R.O.W. TAKING LINE		
SLOPE RIGHTS		
TOP OF CUT		
TOE OF SLOPE		

SURVEYED BY : L. ORVIS  
SURVEYED DATE : 10-30-2011

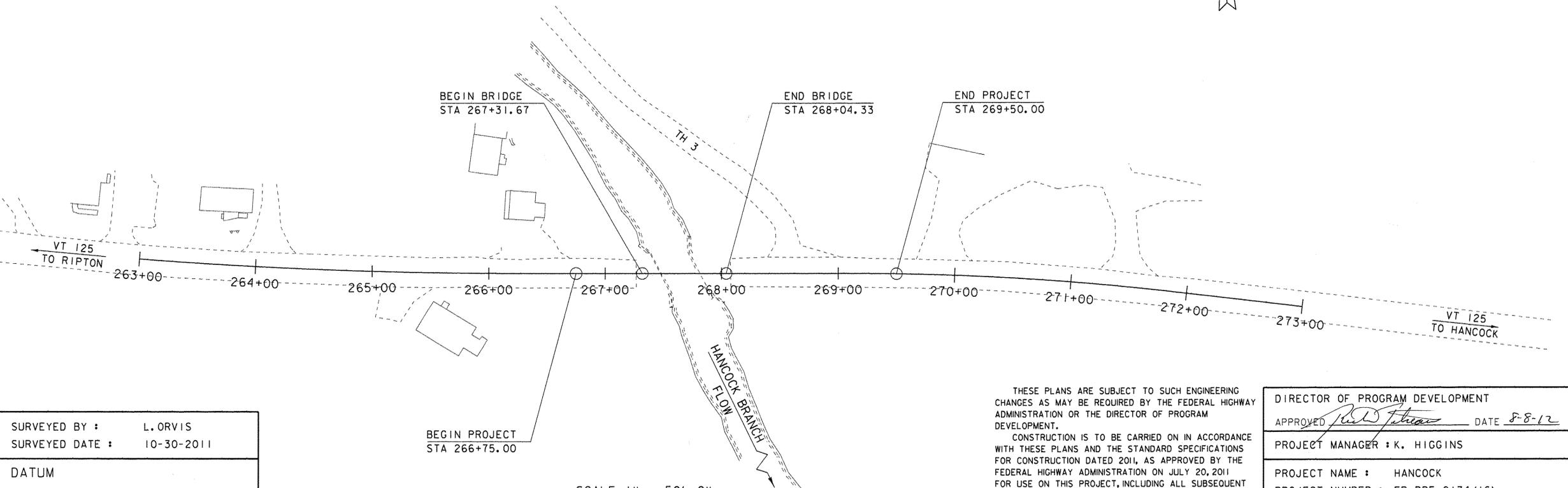
DATUM  
VERTICAL      NAVD 88  
HORIZONTAL    NAD 83 (CORS)

BEGIN PROJECT  
STA 266+75.00

BEGIN BRIDGE  
STA 267+31.67

END BRIDGE  
STA 268+04.33

END PROJECT  
STA 269+50.00



SCALE 1" = 50' - 0"  
50      0      50

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

DIRECTOR OF PROGRAM DEVELOPMENT	
APPROVED	DATE 8-8-12
PROJECT MANAGER : K. HIGGINS	
PROJECT NAME : HANCOCK	
PROJECT NUMBER : ER BRF 0174 (16)	
SHEET 1 OF 44 SHEETS	

INDEX OF SHEETS						FINAL HYDRAULIC REPORT																																																																																																																													
<b>PLAN SHEETS</b>						<b>STANDARDS LIST</b>						<b>HYDROLOGIC DATA</b>						<b>PROPOSED STRUCTURE</b>																																																																																																																	
1	TITLE SHEET	A-76	STANDARDS FOR TOWN & DEVELOPMENT ROADS	03-03-2003	Date: February 2012						<b>STRUCTURE TYPE:</b> Single span bridge																																																																																																																								
2	PRELIMINARY INFORMATION SHEET	B-12	SIDE ROAD INTERSECTION, DEPRESSED RAMP	06-01-1994	DRAINAGE AREA: 18.0 sq. mi.						CLEAR SPAN(NORMAL TO STREAM): 62'																																																																																																																								
3	GENERAL NOTES	E-100	CONSTRUCTION APPROACH SIGNS	01-02-2004	CHARACTER OF TERRAIN: Mostly forested, steep						VERTICAL CLEARANCE ABOVE STREAMBED: 12'																																																																																																																								
4 - 5	QUANTITY SHEET 1-2	E-101	CONSTRUCTION SIGN DETAILS	05-30-2003	STREAM CHARACTERISTICS: Sinuous, probably incised						WATERWAY OF FULL OPENING: 475 sq. ft.																																																																																																																								
6 - 7	TYPICAL SECTIONS 1-2	E-102	CONSTRUCTION SIGN DETAILS	06-30-2003	NATURE OF STREAMBED: Sand, gravel, cobbles						WATER SURFACE ELEVATIONS AT:																																																																																																																								
8	TIE SHEET	E-102A	CONSTRUCTION SIGN DETAILS	05-01-2004	PEAK FLOW DATA						Q2.33 = 1034.9' VELOCITY= 7.7 fps																																																																																																																								
9	ALIGNMENT SHEET	E-107	DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS	06-30-2003	Q 2.33 = 1050 cfs Q 50 = 3600 cfs						Q10 = 1037.2' " 10.3 fps																																																																																																																								
10	LAYOUT SHEET	E-134	BRIDGE NUMBER PLAQUE	08-08-1995	Q 10 = 2175 cfs Q 100 = 4375 cfs						Q25 = 1038.4' " 13.0 fps																																																																																																																								
11	MAINLINE PROFILE	E-164	SQUARE STEEL SIGN POST	06-08-2009	Q 25 = 2900 cfs Q 500 = 6550 cfs						Q50 = 1039.4' " 14.0 fps																																																																																																																								
12	FASSETT HILL ROAD PROFILE	E-193	PAVEMENT MARKING DETAILS	08-18-1995	DATE OF FLOOD OF RECORD: Unknown						Q100 = 1040.6' " 13.7 fps																																																																																																																								
13	PROPOSED UTILITIES	G-1B	BOX BEAM GUARD RAIL	06-01-1994	ESTIMATED DISCHARGE: Unknown						IS THE ROADWAY OVERTOPPED BELOW Q100: No																																																																																																																								
14	RAIL LAYOUT SHEET	S-364 A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	04-23-2012	WATER SURFACE ELEV.: Unknown						FREQUENCY: N/A																																																																																																																								
15	BORING LAYOUT SHEET	S-364 B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012	NATURAL STREAM VELOCITY: @ Q50 = 11.0 fps						RELIEF ELEVATION: 1041.7'																																																																																																																								
16 - 17	BORING LOGS	S-364 C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012	ICE CONDITIONS: Moderate						DISCHARGE OVER ROAD @Q100: N/A																																																																																																																								
18	FRAMING PLAN	S-364 D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012	DEBRIS: Moderate						AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1041.6'																																																																																																																								
19	NEXT BEAM TYPICAL SECTION	<b>STRUCTURES DETAILS</b>						VERTICAL CLEARANCE: @ Q50 = 2.2'																																																																																																																											
20	BEARING DETAILS							SD-501.00	CONCRETE DETAILS AND NOTES	05-07-2010	SCOUR: Contraction scour at Q100 = 2.0' and at Q500= 5.5'																																																																																																																								
21	APPROACH SLAB DETAILS							SD-502.00	CONCRETE DETAILS AND NOTES	06-10-2010	REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV																																																																																																																								
22	ABUTMENT PLAN							SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	05-07-2010	<b>PERMIT INFORMATION</b>																																																																																																																								
23	ABUTMENT REINFORCING							<b>TEMPORARY BRIDGE REQUIREMENTS</b>																																																																																																																											
24	CLOSURE POUR DETAILS																<b>ADDITIONAL INFORMATION</b>																																																																																																																		
25	WINGWALL DETAILS																						<b>TRAFFIC MAINTENANCE NOTES</b>																																																																																																												
26 - 27	R.O.W. DETAIL SHEET 1-2																												<b>DESIGN VALUES</b>																																																																																																						
28	R.O.W. LAYOUT SHEET																																		<b>LRFR LOAD RATING FACTORS</b>																																																																																																
29	EPSC NARRATIVE																																								<b>TRUCK</b>																																																																																										
30	EPSC PLAN																																														<b>LOADING LEVELS</b>																																																																																				
31 - 32	EPSC DETAIL 1-2																																																				<b>TONNAGE</b>																																																																														
33 - 37	MAINLINE SECTIONS	<b>INVENTORY</b>																																																																																																																																	
38 - 39	FASSETT HILL ROAD SECTIONS																																																										<b>POSTING</b>																																																																								
40 - 44	CHANNEL SECTIONS																																																																<b>OPERATING</b>																																																																		
<b>TRAFFIC DATA</b>														<b>TEMPORARY BRIDGE PROFILE ALONG TEMP CL</b>																																																									<b>PILE DRIVING AND TESTING REQUIREMENTS</b>																																																												
								<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>YEAR</th><th>ADT</th><th>DHV</th><th>% D</th><th>% T</th><th>ADTT</th></tr> </thead> <tbody> <tr> <td>2014</td><td>1200</td><td>160</td><td>54</td><td>10.6</td><td>110</td></tr> <tr> <td>2034</td><td>1300</td><td>170</td><td>54</td><td>14.9</td><td>170</td></tr> </tbody> </table>																																																																					YEAR	ADT	DHV	% D	% T	ADTT	2014	1200	160	54	10.6	110	2034	1300	170	54	14.9	170							<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="8">TRUCK</th></tr> <tr> <th>H-20</th><th>HL-93</th><th>3S2</th><th>6 AXLE</th><th>3A STR.</th><th>4A STR.</th><th>5A SEMI</th><th></th></tr> </thead> <tbody> <tr> <td>20</td><td>36</td><td>36</td><td>66</td><td>30</td><td>34.5</td><td>38</td><td></td></tr> </tbody> </table>						TRUCK								H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEMI		20	36	36	66	30	34.5	38		
																				YEAR	ADT	DHV																																																							% D	% T	ADTT																																																				
																				2014	1200	160	54	10.6	110																																																																																																										
																				2034	1300	170	54	14.9	170																																																																																																										
																				TRUCK																																																																																																															
																				H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEMI																																																																																																									
																				20	36	36	66	30	34.5	38																																																																																																									
																				<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">LOADING LEVELS</th></tr> </thead> <tbody> <tr> <td>OPERATING</td><td>5.85</td></tr> <tr> <td>COMMENTS:</td><td></td></tr> </tbody> </table>						LOADING LEVELS		OPERATING	5.85	COMMENTS:		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">DESIGN VALUES</th></tr> </thead> <tbody> <tr> <td>1. DESIGN LIVE LOAD</td><td>HL-93</td></tr> <tr> <td>2. FUTURE PAVEMENT</td><td>dp: 3.0 INCH</td></tr> <tr> <td>3. DESIGN SPAN</td><td>L: 70.00 FT</td></tr> <tr> <td>4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)</td><td>Δ: 3.86 INCH</td></tr> <tr> <td>5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)</td><td>fy: 270 KSI</td></tr> <tr> <td>6. PRESTRESSED CONCRETE STRENGTH</td><td>f'c: 10.0 KSI</td></tr> <tr> <td>7. PRESTRESSED CONCRETE RELEASE STRENGTH</td><td>f'ci: 8.0 KSI</td></tr> <tr> <td>8. CONCRETE, HIGH PERFORMANCE CLASS AA</td><td>f'c: -- KSI</td></tr> <tr> <td>9. CONCRETE, HIGH PERFORMANCE CLASS A</td><td>f'c: -- KSI</td></tr> <tr> <td>10. CONCRETE, HIGH PERFORMANCE CLASS B</td><td>f'c: -- KSI</td></tr> <tr> <td>11. CONCRETE, CLASS C</td><td>f'c: -- KSI</td></tr> <tr> <td>12. REINFORCING STEEL</td><td>fy: 60 KSI</td></tr> <tr> <td>13. STRUCTURAL STEEL AASHTO M270</td><td>fy: ---</td></tr> <tr> <td>14. SOIL UNIT WEIGHT</td><td>γ: 0.140 KCF</td></tr> <tr> <td>15. NOMINAL BEARING RESISTANCE OF SOIL</td><td>qn: 4.0 KSF</td></tr> <tr> <td>16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)</td><td>φ: ---</td></tr> <tr> <td>17. NOMINAL BEARING RESISTANCE OF ROCK</td><td>qn: 10.0 KSF</td></tr> <tr> <td>18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)</td><td>φ: ---</td></tr> <tr> <td>19. NOMINAL AXIAL PILE RESISTANCE</td><td>qp: 414.0 KIPS</td></tr> <tr> <td>20. PILE YIELD STRENGTH ASTM A572</td><td>fy: 50 KSI</td></tr> <tr> <td>21. PILE SIZE</td><td>HP 12X74</td></tr> <tr> <td>22. EST. PILE LENGTH</td><td>Lp: 41 FT</td></tr> <tr> <td>23. PILE RESISTANCE FACTOR</td><td>φ: ---</td></tr> <tr> <td>24. LATERAL PILE DEFLECTION</td><td>Δ: ---</td></tr> <tr> <td>25. BASIC WIND SPEED</td><td>V3s: ---</td></tr> <tr> <td>26. MINIMUM GROUND SNOW LOAD</td><td>ps: ---</td></tr> <tr> <td>27. SEISMIC DATA</td><td>PGA: --- S: --- S1: ---</td></tr> </tbody> </table>						DESIGN VALUES		1. DESIGN LIVE LOAD	HL-93	2. FUTURE PAVEMENT	dp: 3.0 INCH	3. DESIGN SPAN	L: 70.00 FT	4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: 3.86 INCH	5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	fy: 270 KSI	6. PRESTRESSED CONCRETE STRENGTH	f'c: 10.0 KSI	7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'ci: 8.0 KSI	8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'c: -- KSI	9. CONCRETE, HIGH PERFORMANCE CLASS A	f'c: -- KSI	10. CONCRETE, HIGH PERFORMANCE CLASS B																			f'c: -- KSI	11. CONCRETE, CLASS C	f'c: -- KSI	12. REINFORCING STEEL	fy: 60 KSI	13. STRUCTURAL STEEL AASHTO M270	fy: ---	14. SOIL UNIT WEIGHT	γ: 0.140 KCF	15. NOMINAL BEARING RESISTANCE OF SOIL	qn: 4.0 KSF	16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---	17. NOMINAL BEARING RESISTANCE OF ROCK	qn: 10.0 KSF	18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---	19. NOMINAL AXIAL PILE RESISTANCE													qp: 414.0 KIPS	20. PILE YIELD STRENGTH ASTM A572	fy: 50 KSI	21. PILE SIZE	HP 12X74	22. EST. PILE LENGTH	Lp: 41 FT	23. PILE RESISTANCE FACTOR	φ: ---	24. LATERAL PILE DEFLECTION	Δ: ---	25. BASIC WIND SPEED	V3s: ---	26. MINIMUM GROUND SNOW LOAD	ps: ---	27. SEISMIC DATA	PGA: --- S: --- S1: ---								
						LOADING LEVELS																																																																																																																													
						OPERATING	5.85																																																																																																																												
						COMMENTS:																																																																																																																													
DESIGN VALUES																																																																																																																																			
1. DESIGN LIVE LOAD	HL-93																																																																																																																																		
2. FUTURE PAVEMENT	dp: 3.0 INCH																																																																																																																																		
3. DESIGN SPAN	L: 70.00 FT																																																																																																																																		
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: 3.86 INCH																																																																																																																																		
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	fy: 270 KSI																																																																																																																																		
6. PRESTRESSED CONCRETE STRENGTH	f'c: 10.0 KSI																																																																																																																																		
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'ci: 8.0 KSI																																																																																																																																		
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'c: -- KSI																																																																																																																																		
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'c: -- KSI																																																																																																																																		
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'c: -- KSI																																																																																																																																		
11. CONCRETE, CLASS C	f'c: -- KSI																																																																																																																																		
12. REINFORCING STEEL	fy: 60 KSI																																																																																																																																		
13. STRUCTURAL STEEL AASHTO M270	fy: ---																																																																																																																																		
14. SOIL UNIT WEIGHT	γ: 0.140 KCF																																																																																																																																		
15. NOMINAL BEARING RESISTANCE OF SOIL	qn: 4.0 KSF																																																																																																																																		
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---																																																																																																																																		
17. NOMINAL BEARING RESISTANCE OF ROCK	qn: 10.0 KSF																																																																																																																																		
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---																																																																																																																																		
19. NOMINAL AXIAL PILE RESISTANCE	qp: 414.0 KIPS																																																																																																																																		
20. PILE YIELD STRENGTH ASTM A572	fy: 50 KSI																																																																																																																																		
21. PILE SIZE	HP 12X74																																																																																																																																		
22. EST. PILE LENGTH	Lp: 41 FT																																																																																																																																		
23. PILE RESISTANCE FACTOR	φ: ---																																																																																																																																		
24. LATERAL PILE DEFLECTION	Δ: ---																																																																																																																																		
25. BASIC WIND SPEED	V3s: ---																																																																																																																																		
26. MINIMUM GROUND SNOW LOAD	ps: ---																																																																																																																																		
27. SEISMIC DATA	PGA: --- S: --- S1: ---																																																																																																																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R<sub>max</sub>: 357.00 KIP</td></tr> <tr> <td>2. PILE TEST RESISTANCE FACTOR</td><td>φ: 0</td></tr> <tr> <td>3. MAXIMUM PILE TIP ELEVATION</td><td>: 0.00 FT</td></tr> <tr> <td>4. REFER TO GENERAL NOTES.</td><td></td></tr> </tbody> </table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP	2. PILE TEST RESISTANCE FACTOR	φ: 0	3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT	4. REFER TO GENERAL NOTES.		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PROJECT INFORMATION</th></tr> </thead> <tbody> <tr> <td>PROJECT NAME:</td><td>HANCOCK</td></tr> <tr> <td>PROJECT NUMBER:</td><td>ER-BRF 0174(16)</td></tr> <tr> <td>FILE NAME:</td><td>s11c210pi.xls</td></tr> <tr> <td>PROJECT LEADER:</td><td>K. HIGGINS</td></tr> <tr> <td>DESIGNED BY:</td><td>W. LAMMER</td></tr> <tr> <td>PRELIMINARY INFORMATION SHEET</td><td></td></tr> </tbody> </table>						PROJECT INFORMATION		PROJECT NAME:	HANCOCK	PROJECT NUMBER:	ER-BRF 0174(16)	FILE NAME:	s11c210pi.xls	PROJECT LEADER:	K. HIGGINS	DESIGNED BY:	W. LAMMER	PRELIMINARY INFORMATION SHEET																																																																																					
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP																																																																																																																						
2. PILE TEST RESISTANCE FACTOR	φ: 0																																																																																																																																		
3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT																																																																																																																																		
4. REFER TO GENERAL NOTES.																																																																																																																																			
PROJECT INFORMATION																																																																																																																																			
PROJECT NAME:	HANCOCK																																																																																																																																		
PROJECT NUMBER:	ER-BRF 0174(16)																																																																																																																																		
FILE NAME:	s11c210pi.xls																																																																																																																																		
PROJECT LEADER:	K. HIGGINS																																																																																																																																		
DESIGNED BY:	W. LAMMER																																																																																																																																		
PRELIMINARY INFORMATION SHEET																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R<sub>max</sub>: 357.00 KIP</td></tr> <tr> <td>2. PILE TEST RESISTANCE FACTOR</td><td>φ: 0</td></tr> <tr> <td>3. MAXIMUM PILE TIP ELEVATION</td><td>: 0.00 FT</td></tr> <tr> <td>4. REFER TO GENERAL NOTES.</td><td></td></tr> </tbody> </table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP	2. PILE TEST RESISTANCE FACTOR	φ: 0	3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT	4. REFER TO GENERAL NOTES.		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PROJECT INFORMATION</th></tr> </thead> <tbody> <tr> <td>PROJECT NAME:</td><td>HANCOCK</td></tr> <tr> <td>PROJECT NUMBER:</td><td>ER-BRF 0174(16)</td></tr> <tr> <td>FILE NAME:</td><td>s11c210pi.xls</td></tr> <tr> <td>PROJECT LEADER:</td><td>K. HIGGINS</td></tr> <tr> <td>DESIGNED BY:</td><td>W. LAMMER</td></tr> <tr> <td>PRELIMINARY INFORMATION SHEET</td><td></td></tr> </tbody> </table>						PROJECT INFORMATION		PROJECT NAME:	HANCOCK	PROJECT NUMBER:	ER-BRF 0174(16)	FILE NAME:	s11c210pi.xls	PROJECT LEADER:	K. HIGGINS	DESIGNED BY:	W. LAMMER	PRELIMINARY INFORMATION SHEET																																																																																					
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP																																																																																																																						
2. PILE TEST RESISTANCE FACTOR	φ: 0																																																																																																																																		
3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT																																																																																																																																		
4. REFER TO GENERAL NOTES.																																																																																																																																			
PROJECT INFORMATION																																																																																																																																			
PROJECT NAME:	HANCOCK																																																																																																																																		
PROJECT NUMBER:	ER-BRF 0174(16)																																																																																																																																		
FILE NAME:	s11c210pi.xls																																																																																																																																		
PROJECT LEADER:	K. HIGGINS																																																																																																																																		
DESIGNED BY:	W. LAMMER																																																																																																																																		
PRELIMINARY INFORMATION SHEET																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R<sub>max</sub>: 357.00 KIP</td></tr> <tr> <td>2. PILE TEST RESISTANCE FACTOR</td><td>φ: 0</td></tr> <tr> <td>3. MAXIMUM PILE TIP ELEVATION</td><td>: 0.00 FT</td></tr> <tr> <td>4. REFER TO GENERAL NOTES.</td><td></td></tr> </tbody> </table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP	2. PILE TEST RESISTANCE FACTOR	φ: 0	3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT	4. REFER TO GENERAL NOTES.		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PROJECT INFORMATION</th></tr> </thead> <tbody> <tr> <td>PROJECT NAME:</td><td>HANCOCK</td></tr> <tr> <td>PROJECT NUMBER:</td><td>ER-BRF 0174(16)</td></tr> <tr> <td>FILE NAME:</td><td>s11c210pi.xls</td></tr> <tr> <td>PROJECT LEADER:</td><td>K. HIGGINS</td></tr> <tr> <td>DESIGNED BY:</td><td>W. LAMMER</td></tr> <tr> <td>PRELIMINARY INFORMATION SHEET</td><td></td></tr> </tbody> </table>						PROJECT INFORMATION		PROJECT NAME:	HANCOCK	PROJECT NUMBER:	ER-BRF 0174(16)	FILE NAME:	s11c210pi.xls	PROJECT LEADER:	K. HIGGINS	DESIGNED BY:	W. LAMMER	PRELIMINARY INFORMATION SHEET																																																																																					
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP																																																																																																																						
2. PILE TEST RESISTANCE FACTOR	φ: 0																																																																																																																																		
3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT																																																																																																																																		
4. REFER TO GENERAL NOTES.																																																																																																																																			
PROJECT INFORMATION																																																																																																																																			
PROJECT NAME:	HANCOCK																																																																																																																																		
PROJECT NUMBER:	ER-BRF 0174(16)																																																																																																																																		
FILE NAME:	s11c210pi.xls																																																																																																																																		
PROJECT LEADER:	K. HIGGINS																																																																																																																																		
DESIGNED BY:	W. LAMMER																																																																																																																																		
PRELIMINARY INFORMATION SHEET																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R<sub>max</sub>: 357.00 KIP</td></tr> <tr> <td>2. PILE TEST RESISTANCE FACTOR</td><td>φ: 0</td></tr> <tr> <td>3. MAXIMUM PILE TIP ELEVATION</td><td>: 0.00 FT</td></tr> <tr> <td>4. REFER TO GENERAL NOTES.</td><td></td></tr> </tbody> </table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP	2. PILE TEST RESISTANCE FACTOR	φ: 0	3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT	4. REFER TO GENERAL NOTES.		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PROJECT INFORMATION</th></tr> </thead> <tbody> <tr> <td>PROJECT NAME:</td><td>HANCOCK</td></tr> <tr> <td>PROJECT NUMBER:</td><td>ER-BRF 0174(16)</td></tr> <tr> <td>FILE NAME:</td><td>s11c210pi.xls</td></tr> <tr> <td>PROJECT LEADER:</td><td>K. HIGGINS</td></tr> <tr> <td>DESIGNED BY:</td><td>W. LAMMER</td></tr> <tr> <td>PRELIMINARY INFORMATION SHEET</td><td></td></tr> </tbody> </table>						PROJECT INFORMATION		PROJECT NAME:	HANCOCK	PROJECT NUMBER:	ER-BRF 0174(16)	FILE NAME:	s11c210pi.xls	PROJECT LEADER:	K. HIGGINS	DESIGNED BY:	W. LAMMER	PRELIMINARY INFORMATION SHEET																																																																																					
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP																																																																																																																						
2. PILE TEST RESISTANCE FACTOR	φ: 0																																																																																																																																		
3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT																																																																																																																																		
4. REFER TO GENERAL NOTES.																																																																																																																																			
PROJECT INFORMATION																																																																																																																																			
PROJECT NAME:	HANCOCK																																																																																																																																		
PROJECT NUMBER:	ER-BRF 0174(16)																																																																																																																																		
FILE NAME:	s11c210pi.xls																																																																																																																																		
PROJECT LEADER:	K. HIGGINS																																																																																																																																		
DESIGNED BY:	W. LAMMER																																																																																																																																		
PRELIMINARY INFORMATION SHEET																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R<sub>max</sub>: 357.00 KIP</td></tr> <tr> <td>2. PILE TEST RESISTANCE FACTOR</td><td>φ: 0</td></tr> <tr> <td>3. MAXIMUM PILE TIP ELEVATION</td><td>: 0.00 FT</td></tr> <tr> <td>4. REFER TO GENERAL NOTES.</td><td></td></tr> </tbody> </table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP	2. PILE TEST RESISTANCE FACTOR	φ: 0	3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT	4. REFER TO GENERAL NOTES.		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PROJECT INFORMATION</th></tr> </thead> <tbody> <tr> <td>PROJECT NAME:</td><td>HANCOCK</td></tr> <tr> <td>PROJECT NUMBER:</td><td>ER-BRF 0174(16)</td></tr> <tr> <td>FILE NAME:</td><td>s11c210pi.xls</td></tr> <tr> <td>PROJECT LEADER:</td><td>K. HIGGINS</td></tr> <tr> <td>DESIGNED BY:</td><td>W. LAMMER</td></tr> <tr> <td>PRELIMINARY INFORMATION SHEET</td><td></td></tr> </tbody> </table>						PROJECT INFORMATION		PROJECT NAME:	HANCOCK	PROJECT NUMBER:	ER-BRF 0174(16)	FILE NAME:	s11c210pi.xls	PROJECT LEADER:	K. HIGGINS	DESIGNED BY:	W. LAMMER	PRELIMINARY INFORMATION SHEET																																																																																					
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP																																																																																																																						
2. PILE TEST RESISTANCE FACTOR	φ: 0																																																																																																																																		
3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT																																																																																																																																		
4. REFER TO GENERAL NOTES.																																																																																																																																			
PROJECT INFORMATION																																																																																																																																			
PROJECT NAME:	HANCOCK																																																																																																																																		
PROJECT NUMBER:	ER-BRF 0174(16)																																																																																																																																		
FILE NAME:	s11c210pi.xls																																																																																																																																		
PROJECT LEADER:	K. HIGGINS																																																																																																																																		
DESIGNED BY:	W. LAMMER																																																																																																																																		
PRELIMINARY INFORMATION SHEET																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R<sub>max</sub>: 357.00 KIP</td></tr> <tr> <td>2. PILE TEST RESISTANCE FACTOR</td><td>φ: 0</td></tr> <tr> <td>3. MAXIMUM PILE TIP ELEVATION</td><td>: 0.00 FT</td></tr> <tr> <td>4. REFER TO GENERAL NOTES.</td><td></td></tr> </tbody> </table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP	2. PILE TEST RESISTANCE FACTOR	φ: 0	3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT	4. REFER TO GENERAL NOTES.		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PROJECT INFORMATION</th></tr> </thead> <tbody> <tr> <td>PROJECT NAME:</td><td>HANCOCK</td></tr> <tr> <td>PROJECT NUMBER:</td><td>ER-BRF 0174(16)</td></tr> <tr> <td>FILE NAME:</td><td>s11c210pi.xls</td></tr> <tr> <td>PROJECT LEADER:</td><td>K. HIGGINS</td></tr> <tr> <td>DESIGNED BY:</td><td>W. LAMMER</td></tr> <tr> <td>PRELIMINARY INFORMATION SHEET</td><td></td></tr> </tbody> </table>						PROJECT INFORMATION		PROJECT NAME:	HANCOCK	PROJECT NUMBER:	ER-BRF 0174(16)	FILE NAME:	s11c210pi.xls	PROJECT LEADER:	K. HIGGINS	DESIGNED BY:	W. LAMMER	PRELIMINARY INFORMATION SHEET																																																																																					
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP																																																																																																																						
2. PILE TEST RESISTANCE FACTOR	φ: 0																																																																																																																																		
3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT																																																																																																																																		
4. REFER TO GENERAL NOTES.																																																																																																																																			
PROJECT INFORMATION																																																																																																																																			
PROJECT NAME:	HANCOCK																																																																																																																																		
PROJECT NUMBER:	ER-BRF 0174(16)																																																																																																																																		
FILE NAME:	s11c210pi.xls																																																																																																																																		
PROJECT LEADER:	K. HIGGINS																																																																																																																																		
DESIGNED BY:	W. LAMMER																																																																																																																																		
PRELIMINARY INFORMATION SHEET																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R<sub>max</sub>: 357.00 KIP</td></tr> <tr> <td>2. PILE TEST RESISTANCE FACTOR</td><td>φ: 0</td></tr> <tr> <td>3. MAXIMUM PILE TIP ELEVATION</td><td>: 0.00 FT</td></tr> <tr> <td>4. REFER TO GENERAL NOTES.</td><td></td></tr> </tbody> </table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP	2. PILE TEST RESISTANCE FACTOR	φ: 0	3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT	4. REFER TO GENERAL NOTES.		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PROJECT INFORMATION</th></tr> </thead> <tbody> <tr> <td>PROJECT NAME:</td><td>HANCOCK</td></tr> <tr> <td>PROJECT NUMBER:</td><td>ER-BRF 0174(16)</td></tr> <tr> <td>FILE NAME:</td><td>s11c210pi.xls</td></tr> <tr> <td>PROJECT LEADER:</td><td>K. HIGGINS</td></tr> <tr> <td>DESIGNED BY:</td><td>W. LAMMER</td></tr> <tr> <td>PRELIMINARY INFORMATION SHEET</td><td></td></tr> </tbody> </table>						PROJECT INFORMATION		PROJECT NAME:	HANCOCK	PROJECT NUMBER:	ER-BRF 0174(16)	FILE NAME:	s11c210pi.xls	PROJECT LEADER:	K. HIGGINS	DESIGNED BY:	W. LAMMER	PRELIMINARY INFORMATION SHEET																																																																																					
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP																																																																																																																						
2. PILE TEST RESISTANCE FACTOR	φ: 0																																																																																																																																		
3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT																																																																																																																																		
4. REFER TO GENERAL NOTES.																																																																																																																																			
PROJECT INFORMATION																																																																																																																																			
PROJECT NAME:	HANCOCK																																																																																																																																		
PROJECT NUMBER:	ER-BRF 0174(16)																																																																																																																																		
FILE NAME:	s11c210pi.xls																																																																																																																																		
PROJECT LEADER:	K. HIGGINS																																																																																																																																		
DESIGNED BY:	W. LAMMER																																																																																																																																		
PRELIMINARY INFORMATION SHEET																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R<sub>max</sub>: 357.00 KIP</td></tr> <tr> <td>2. PILE TEST RESISTANCE FACTOR</td><td>φ: 0</td></tr> <tr> <td>3. MAXIMUM PILE TIP ELEVATION</td><td>: 0.00 FT</td></tr> <tr> <td>4. REFER TO GENERAL NOTES.</td><td></td></tr> </tbody> </table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP	2. PILE TEST RESISTANCE FACTOR	φ: 0	3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT	4. REFER TO GENERAL NOTES.		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PROJECT INFORMATION</th></tr> </thead> <tbody> <tr> <td>PROJECT NAME:</td><td>HANCOCK</td></tr> <tr> <td>PROJECT NUMBER:</td><td>ER-BRF 0174(16)</td></tr> <tr> <td>FILE NAME:</td><td>s11c210pi.xls</td></tr> <tr> <td>PROJECT LEADER:</td><td>K. HIGGINS</td></tr> <tr> <td>DESIGNED BY:</td><td>W. LAMMER</td></tr> <tr> <td>PRELIMINARY INFORMATION SHEET</td><td></td></tr> </tbody> </table>						PROJECT INFORMATION		PROJECT NAME:	HANCOCK	PROJECT NUMBER:	ER-BRF 0174(16)	FILE NAME:	s11c210pi.xls	PROJECT LEADER:	K. HIGGINS	DESIGNED BY:	W. LAMMER	PRELIMINARY INFORMATION SHEET																																																																																					
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP																																																																																																																						
2. PILE TEST RESISTANCE FACTOR	φ: 0																																																																																																																																		
3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT																																																																																																																																		
4. REFER TO GENERAL NOTES.																																																																																																																																			
PROJECT INFORMATION																																																																																																																																			
PROJECT NAME:	HANCOCK																																																																																																																																		
PROJECT NUMBER:	ER-BRF 0174(16)																																																																																																																																		
FILE NAME:	s11c210pi.xls																																																																																																																																		
PROJECT LEADER:	K. HIGGINS																																																																																																																																		
DESIGNED BY:	W. LAMMER																																																																																																																																		
PRELIMINARY INFORMATION SHEET																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R<sub>max</sub>: 357.00 KIP</td></tr> <tr> <td>2. PILE TEST RESISTANCE FACTOR</td><td>φ: 0</td></tr> <tr> <td>3. MAXIMUM PILE TIP ELEVATION</td><td>: 0.00 FT</td></tr> <tr> <td>4. REFER TO GENERAL NOTES.</td><td></td></tr> </tbody> </table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP	2. PILE TEST RESISTANCE FACTOR	φ: 0	3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT	4. REFER TO GENERAL NOTES.		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PROJECT INFORMATION</th></tr> </thead> <tbody> <tr> <td>PROJECT NAME:</td><td>HANCOCK</td></tr> <tr> <td>PROJECT NUMBER:</td><td>ER-BRF 0174(16)</td></tr> <tr> <td>FILE NAME:</td><td>s11c210pi.xls</td></tr> <tr> <td>PROJECT LEADER:</td><td>K. HIGGINS</td></tr> <tr> <td>DESIGNED BY:</td><td>W. LAMMER</td></tr> <tr> <td>PRELIMINARY INFORMATION SHEET</td><td></td></tr> </tbody> </table>						PROJECT INFORMATION		PROJECT NAME:	HANCOCK	PROJECT NUMBER:	ER-BRF 0174(16)	FILE NAME:	s11c210pi.xls	PROJECT LEADER:	K. HIGGINS	DESIGNED BY:	W. LAMMER	PRELIMINARY INFORMATION SHEET																																																																																					
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R <sub>max</sub> : 357.00 KIP																																																																																																																						
2. PILE TEST RESISTANCE FACTOR	φ: 0																																																																																																																																		
3. MAXIMUM PILE TIP ELEVATION	: 0.00 FT																																																																																																																																		
4. REFER TO GENERAL NOTES.																																																																																																																																			
PROJECT INFORMATION																																																																																																																																			
PROJECT NAME:	HANCOCK																																																																																																																																		
PROJECT NUMBER:	ER-BRF 0174(16)																																																																																																																																		
FILE NAME:	s11c210pi.xls																																																																																																																																		
PROJECT LEADER:	K. HIGGINS																																																																																																																																		
DESIGNED BY:	W. LAMMER																																																																																																																																		
PRELIMINARY INFORMATION SHEET																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TRAFFIC DATA</th></tr> </thead> <tbody> <tr> <td>20 year ESAL for flexible pavement from 2014 to 2034</td><td>: 643000</td></tr> <tr> <td>40 year ESAL for flexible pavement from 2014 to 2054</td><td>: 1431000</td></tr> <tr> <td>Design Speed</td><td>: 50 mph</td></tr> </tbody> </table>						TRAFFIC DATA		20 year ESAL for flexible pavement from 2014 to 2034	: 643000	40 year ESAL for flexible pavement from 2014 to 2054	: 1431000	Design Speed	: 50 mph	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">TEMPORARY BRIDGE PROFILE ALONG TEMP CL</th></tr> </thead> <tbody> <tr> <td colspan="2">BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT</td></tr> <tr> <td>45 FT (MIN)</td><td>8.50 FT (MIN)</td></tr> <tr> <td colspan="2">OPENING 320.00 FT (MIN)</td></tr> </tbody> </table>						TEMPORARY BRIDGE PROFILE ALONG TEMP CL		BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT		45 FT (MIN)	8.50 FT (MIN)	OPENING 320.00 FT (MIN)																																																																																																									
						TRAFFIC DATA																																																																																																																													
						20 year ESAL for flexible pavement from 2014 to 2034	: 643000																																																																																																																												
						40 year ESAL for flexible pavement from 2014 to 2054	: 1431000																																																																																																																												
						Design Speed	: 50 mph																																																																																																																												
						TEMPORARY BRIDGE PROFILE ALONG TEMP CL																																																																																																																													
						BOTTOM OF BEAMS ELEV. = No lower than 1038.4 FT																																																																																																																													
						45 FT (MIN)	8.50 FT (MIN)																																																																																																																												
						OPENING 320.00 FT (MIN)																																																																																																																													
						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">PILE DRIVING AND TESTING REQUIREMENTS</th></tr> </thead> <tbody> <tr> <td>1. NOMINAL PILE DRIVING CAPACITY</td><td>R</td></tr></tbody></table>						PILE DRIVING AND TESTING REQUIREMENTS								1. NOMINAL PILE DRIVING CAPACITY	R																																																																																																														
												PILE DRIVING AND TESTING REQUIREMENTS																																																																																																																							
												1. NOMINAL PILE DRIVING CAPACITY	R																																																																																																																						

## GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE VERMONT AGENCY OF TRANSPORTATION 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2007 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, AND THEIR LATEST REVISIONS.
2. ALL PRECAST CONCRETE ELEMENTS TO BE FABRICATED TO THE SPECIFIED DIMENSIONS WITHIN THE TOLERANCES DICTATED IN THE PRECAST/PRESTRESSED CONCRETE INSTITUTE TOLERANCE MANUAL FOR PRECAST AND PRESTRESSED CONCRETE CONSTRUCTION, MNL 135-00, AND ITS LATEST REVISIONS.
3. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
4. DURING CONSTRUCTION, TRAFFIC SHALL BE MAINTAINED ON A TWO-WAY TEMPORARY BRIDGE CONSTRUCTED UPSTREAM OF THE EXISTING STRUCTURE. THE TEMPORARY BRIDGE AND THE APPROACHES TO THE TEMPORARY BRIDGE SHALL BE PAVED WITH 2 INCHES OF PAVEMENT. THIS WORK SHALL BE PAID FOR UNDER ITEM 528.11, "TWO-WAY TEMPORARY BRIDGE".
5. NO ADJUSTMENTS TO THE BITUMINOUS WEARING SURFACE ON THE BRIDGE SHALL BE MADE TO ACCOUNT FOR THE DIFFERENCE BETWEEN BEAM CAMBER AND THE THEORETICAL ROADWAY PROFILE. THE WEARING SURFACE SHALL BE SHIMMED TRANSVERSELY AS NECESSARY TO ACCOUNT FOR POTENTIAL DIFFERENTIAL CAMBER OF THE ADJACENT BEAMS.

## EARTHWORK

6. REMOVAL OF THE EXISTING, FAILED STRUCTURE SHALL BE UNDER ITEM 529.15, "REMOVAL OF STRUCTURE". THIS WORK SHALL INCLUDE REMOVAL OF THE SUPERSTRUCTURE AND ANY PORTIONS OF THE EXISTING ABUTMENTS THAT FALL OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION.
7. TIMBER CRIBBING IS PRESENT BELOW THE EXISTING ABUTMENTS. THE TIMBER WILL BE REMOVED WITH THE ABUTMENTS INCIDENTAL TO ITEM 529.15, "REMOVAL OF STRUCTURE".
8. EXCAVATION OF SOILS TO THE LIMITS SHOWN ON THE TYPICAL ABUTMENT SECTION SHALL BE PAID FOR UNDER ITEM 204.25, "STRUCTURE EXCAVATION". ALL NECESSARY EXCAVATION OUTSIDE OF THESE LIMITS SHALL BE PAID FOR UNDER ITEM 203.27, "UNCLASSIFIED CHANNEL EXCAVATION".
9. THE "STONE FILL, TYPE IV" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE NEW BEAMS ARE SET.

## CONCRETE

10. ITEM 514.10, "WATER REPELLENT, SILANE", SHALL BE APPLIED TO ALL EXPOSED CONCRETE ON THE BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE, WITH THE EXCEPTION OF THE BOTTOM OF THE PRECAST NEXT BEAMS BETWEEN THE DRIP NOTCHES.
11. ALL CONCRETE PLACED INTEGRALLY WITH THE SUPERSTRUCTURE SHALL BE ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)". ALL PRECAST SUBSTRUCTURE AND APPROACH SLAB CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 540 – PRECAST CONCRETE.
12. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE".
13. ALL REINFORCING STEEL SHALL BE ITEM 507.12, "REINFORCING STEEL, LEVEL II".
14. MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

ALONG BACK FACES OF WALLS AGAINST EARTH	2 INCH
ALONG TOP SURFACE OF DECK SLAB:	2.5 INCH
ALONG BOTTOM SURFACE OF DECK SLAB:	1.5 INCH
ELSEWHERE UNLESS OTHERWISE INDICATED:	3 INCH

## PRECAST ABUTMENTS AND POST-TENSIONING

15. IF VERTICAL CONSTRUCTION JOINTS ARE REQUIRED BY THE CONTRACTOR FOR SHIPMENT OF THE ABUTMENTS, THEN THE SECTIONS SHALL BE KEYED AND MATCH CAST. A JOINT DETAIL SHALL BE SHOWN ON THE FABRICATION DRAWINGS.
16. POST-TENSIONING AND ASSOCIATED ITEMS ARE ONLY REQUIRED IF THE PILE CAP IS CONSTRUCTED OF MORE THAN ONE UNIT. ANY POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510 – PRESTRESSED CONCRETE. GALVANIZED ANCHOR ASSEMBLIES, CONDUIT, AND POST-TENSIONING STRANDS SHALL BE INCLUDED UNDER ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #1) AND/OR "PRECAST CONCRETE STRUCTURE (ABUTMENT #2)" AS APPROPRIATE. POST-TENSIONING STRANDS SHALL BE COVERED WITH SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF THE STRAND, EXCEPT AT ANCHORAGE LOCATIONS.

17. GALVANIZE ANCHOR ASSEMBLIES AFTER FABRICATION ACCORDING TO AASHTO M232M/M 232.
18. DESIGN VALUES
  - a. CONCRETE COMPRESSIVE STRENGTH:  $f_c = 5000$  PSI.
  - b. POST-TENSIONING STRANDS: 0.5 INCH DIAMETER, 270 KSI, LOW RELAXATION 7-WIRE STRANDS.
  - c. ASSUMED MODULUS OF ELASTICITY IS 28,500 KSI.
  - d. THERE SHALL BE 2 STRANDS PER CONDUIT.
  - e. THE JACKING FORCE PER STRAND = 32 KIPS
19. THE CONCRETE FOR THE ABUTMENT # 1 AND ABUTMENT #2 PILE CAVITIES SHALL MEET THE REQUIREMENTS OF SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET).
20. THE CORRUGATED STEEL PIPE SHALL MEET THE REQUIREMENTS OF SUBSECTION 711.01. ALL COSTS ASSOCIATED WITH PLACING THE CORRUGATED STEEL PIPE, SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #1)" AND ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #2)".
21. PROPOSED SEQUENCE OF CONSTRUCTION:
  - a. PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
  - b. DRIVE PILES.
  - c. PLACE PRECAST ABUTMENTS AND INSTALL TRANSVERSE STRANDS (IF MORE THAN ONE UNIT).
  - d. APPLY EPOXY TO MATCH CAST FACES OF VERTICAL CONSTRUCTION JOINT.
  - e. USE A CALIBRATED JACK TO TENSION TO 3 KIPS TO REMOVE SAG IN STRANDS.
  - f. CHECK ALIGNMENT OF PILE CAP ELEMENTS.
  - g. STRESS POST-TENSIONING STRANDS USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL WHO HAVE PREVIOUS EXPERIENCE IN POST-TENSIONING.
  - h. FILL PILE CAVITIES WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".
  - i. PLACE PRECAST WINGWALLS AND GROUT SPLICE CONNECTORS.
  - j. BACKFILL MAY BE COMPLETED AFTER SPLICE CONNECTOR GROUT HAS REACHED 85% OF 5,000 PSI.
22. ALTERNATE SEQUENCE OF CONSTRUCTION MAY BE SUBMITTED FOR APPROVAL BY THE PROJECT MANAGER.

## NEXT D BEAMS

23. NEXT D BEAMS ARE A NON-PROPRIETARY SHAPE DEVELOPED BY PCI NORTHEAST (PCINE). STANDARDIZED SECTION PROPERTIES AND DETAILS MAY BE FOUND AT <http://www.pcine.org>.
24. DESIGN VALUES
  - a. CONCRETE COMPRESSIVE STRENGTH:  $f_c = 10,000$  PSI.
  - b. CONCRETE COMPRESSIVE STRENGTH AT RELEASE:  $f_{ci} = 8,000$  PSI
  - c. PRESTRESSING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW-RELAXATION 7-WIRE STRANDS
  - d. ASSUMED MODULUS OF ELASTICITY = 28,500 KSI.
  - e. THE JACKING FORCE PER STRAND = 47 KIPS
  - f. SERVICE LOADS

MEMBER MOMENT	857 K-FT
SUPERIMPOSED DEAD LOAD MOMENT	341 K-FT
LIVE LOAD AND IMPACT MOMENT	1,320 K-FT
DEAD LOAD REACTION	72 KIPS
LIVE LOAD AND IMPACT REACTION	98 KIPS
TOTAL REACTION	170 KIPS
FINAL CAMBER	1 5/16 INCHES

25. ENDS OF FLANGES IN CONTACT WITH GROUT SHALL BE SANDBLASTED PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO ERECTION OF THE BEAMS.
26. FILL FLANGE CONNECTION WITH TYPE IV MORTAR ACCORDING TO SECTION 510. MORTAR SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 7000 PSI AND SHALL BE EXTENDED WITH AGGREGATE. GROUTING SHALL BE PAID FOR UNDER ITEM 510.24, "GROUTING SHEAR KEYS". THE CONTRACTOR SHALL SUBMIT A MIX DESIGN FOR THIS ITEM FOR APPROVAL BY THE PROJECT MANAGER.
27. METHOD OF FORMING FLANGE CONNECTION SHALL BE DETERMINED BY THE CONTRACTOR. THE FORMS SHALL BE REMOVABLE AND ABLE TO ACCOMMODATE DIFFERENTIAL CAMBER. FORM SUPPORTS SHALL NOT PENETRATE THROUGH THE TOP OF POUR UNLESS APPROVED BY THE ENGINEER.
28. THE FABRICATOR MAY ALTER THE DESIGN AS DETAILED IN THESE PLANS TO ACCOMMODATE THEIR SPECIFIC OPERATION. THIS ALTERATION MUST BE DESIGNED BY A PROFESSIONAL ENGINEER AND MEET THE ABOVE CRITERIA AND SHALL BE APPROVED BY THE PROJECT MANAGER.

29. PROPOSED SEQUENCE OF CONSTRUCTION
  - a. LAY OUT WORKING LINES THE ENTIRE WIDTH OF THE BRIDGE ALONG CENTERLINE OF BEARING, MEASURED FROM A SINGLE WORKING POINT. THE WORKING LINES SHALL BE BASED ON THE NOMINAL BEAM WIDTHS.
  - b. VERIFY THE BEAM SEAT ELEVATIONS AND TAKE CORRECTIVE ACTION IF NECESSARY.
  - c. INSTALL BEARINGS
  - d. ERECT THE BEAMS TO FIT WITHIN THE WORKING LINES.
  - e. ADJUST FASCIA BEAM TO FIT SNUG AGAINST 1/2" CORK ON INTERIOR OF CHEEK WALL.
  - f. CONSTRUCT FORMS FOR THE FLANGE AND CURTAIN WALL CONNECTION POURS.
  - g. GROUT CONNECTIONS BETWEEN BEAM FLANGES AND CURE.
  - h. BACKFILL AND PREPARE GRADE FOR APPROACH SLABS.
  - i. COMPLETE BEAM-END CLOSURE POUR TO BOTTOM OF DECK ALLOWING FOR APPROACH SLAB BRACKET.
  - j. COMPLETE PLACEMENT OF BACKFILL AND PLACE APPROACH SLAB.
  - k. GROUT REBAR DOWELS IN APPROACH SLAB.
  - l. COMPLETE LONGITUDINAL CLOSURE POURS OF APPROACH SLAB.
  - m. COMPLETE BEAM-END CLOSURE POUR TO TOP OF DECK AND APPROACH SLABS.
30. ALTERNATE SEQUENCE OF CONSTRUCTION MAY BE SUBMITTED FOR APPROVAL BY THE PROJECT MANAGER.

## H-PILES

31. TO PREVENT DAMAGE TO THE PILES, PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04 (f).
32. THE PILES SHALL BE DRIVEN TO A NOMINAL PILE DRIVING RESISTANCE ( $R_{NDR}$ ) OF 414 KIPS, PROVIDED A MINIMUM PENETRATION OF 16 FEET BELOW THE BOTTOM OF PILE CAP HAS BEEN ACHIEVED.
33. A MINIMUM OF ONE DYNAMIC PILE TEST SHALL BE CONDUCTED ON ONE PILE AT EACH ABUTMENT. PAYMENT IS ITEM 505.45, "DYNAMIC PILE LOADING TEST".
34. THE TOPS OF THE PILES AFTER DRIVING SHALL NOT VARY FROM THE POSITION SHOWN ON THE PLANS BY MORE THAN 3 INCHES. THE PILE ORIENTATION SHALL NOT VARY BY MORE THAN 5 DEGREES. THE CONTRACTOR SHALL DEMONSTRATE HOW THE TOLERANCES WILL BE MET TO THE SATISFACTION OF THE ENGINEER. THESE MEASURES SHALL BE DEMONSTRATED IN A SUBMITTAL TO BE ACCEPTED BEFORE PILE DRIVING COMMENCES.
35. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY.

## MISCELLANEOUS

36. A TEMPORARY BRIDGE IS IN PLACE OVER THE EXISTING, FAILED STRUCTURE. REMOVAL OF THIS TEMPORARY BRIDGE SHALL BE PAID FOR UNDER SPECIAL PROVISION ITEM 900.645 (REMOVAL OF TEMPORARY BRIDGE AND APPROACHES). THE TEMPORARY BRIDGE IS THE PROPERTY OF VTRANS AND SHALL BE RETURNED TO THE VTRANS MAINTENANCE FACILITY IN MIDDLESEX, VT. CONTACT BILL SARGENT AT (802) 828-2699 TO MAKE NECESSARY ARRANGEMENTS AS PER THE SPECIAL PROVISIONS.
37. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE TEMPORARY UTILITY POLE AT STATION 255+60 +/- AFTER THE INSTALLATION OF THE TEMPORARY BRIDGE.
38. NO TREE REMOVAL SHALL OCCUR WITHIN THE LIMITS DESIGNATED "TREE PROTECTION ZONE" AS INDICATED ON THE LAYOUT SHEET.
39. FOUR (4) LARGE TREES ARE TO BE REMOVED AT STATIONS 268+ 25 LT, 268+35 LT, 268+40 LT, AND 268+69 LT. THE LOGS FROM THESE TREES SHALL REMAIN THE PROPERTY OF THE LANDOWNER AND STOCKPILED ON HIS PROPERTY. THE CONTRACTOR SHALL COORDINATE THE TREE REMOVAL WITH THE LANDOWNER AND THE RESIDENT ENGINEER. THE COST OF THE TREE REMOVAL AND STOCKPILING OF THE LOGS SHALL BE INCLUDED IN ITEM 201.16, "REMOVING LARGE TREES".
40. ONLY MINOR APPROACH WORK FOR THE TEMPORARY DETOUR SHALL OCCUR PRIOR TO APRIL 15, 2013. MINOR WORK INCLUDES: CLEARING AND GRUBBING; PLACING FILL; AND GRADING APPROACHES. THE FOLLOWING DETOUR WORK IS PROHIBITED FROM OCCURRING PRIOR TO APRIL 15, 2013: PAVING; INSTALLING GUARDRAIL; AND INSTALLING THE TEMPORARY BRIDGE. THE DRIVEWAY AT STATION 255+50 LT MUST REMAIN OPEN AT ALL TIMES PRIOR TO RESTRICTING ACCESS TO ALLOW FOR DETOUR TRAFFIC.

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: s11C210GEN.dgn	PLOT DATE: 13-AUG-2012
PROJECT LEADER: K. HIGGINS	DRAWN BY: W. LAMMER
DESIGNED BY: W. LAMMER	CHECKED BY: J. SALVATORI
GENERAL NOTES	SHEET 3 OF 44

# QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
							ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
							1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				
							4				4		EACH	REMOVING LARGE TREES	201.16				
							2525				2525		CY	COMMON EXCAVATION	203.15				
									730		730		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
							1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
									250		250		CY	STRUCTURE EXCAVATION	204.25				
									190		190		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
							500				500		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10				
														BEGIN OPTION AA					
							660				660		CY	SUBBASE OF GRAVEL	301.15				
							660				660		CY	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	301.25				
							660				660		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
														END OPTION AA					
							70				70		CY	AGGREGATE SURFACE COURSE	401.10				
							35				35		CY	AGGREGATE SHOULDERS, IN PLACE	402.10				
							0.25				0.25		CWT	EMULSIFIED ASPHALT	404.65				
							1				1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
									1		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10				
									360		360		LF	STEEL PILING, HP 12 X 74	505.16				
									2		2		EACH	DYNAMIC PILE LOADING TEST	505.45				
									2100		2100		LB	REINFORCING STEEL, LEVEL II	507.12				
									216		216		LF	GROUTING SHEAR KEYS	510.24				
									15		15		GAL	WATER REPELLENT, SILANE	514.10				
									60		60		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10				
									153.34		153.34		LF	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	525.335				
									1		1		LS	MAINTENANCE OF STRUCTURES AND APPROACHES	527.10				
							1				1		LS	TWO-WAY TEMPORARY BRIDGE (1870 SF - EST.)	528.11				
									1		1		EACH	REMOVAL OF STRUCTURE (1400 SF - EST)	529.15				
									16		16		EACH	BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD	531.16				
									1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT #1)	540.10				
									1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT #2)	540.10				
									1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #1)	540.10				
									1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #2)	540.10				
							60				60		LF	CLEANING CULV. PIPE, IN-PLACE [0 TO 24 IN., INCL.]	601.995				
							1				1		EACH	REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS III	604.418				
								1			1		MGAL	DUST CONTROL WITH WATER	609.10				
									520		520		CY	STONE FILL, TYPE IV	613.13				
							97.58				97.58		LF	BOX BEAM GUARDRAIL	621.30				
							3				3		EACH	MANUFACTURED TERMINAL SECTION, TANGENT	621.51				
							4				4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	621.725				

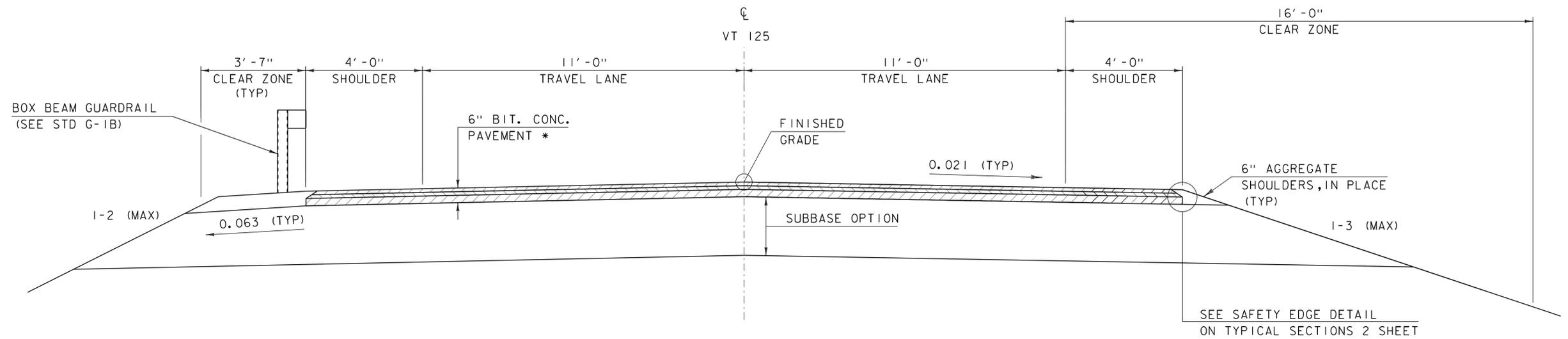
PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)  
FILE NAME: sl1c210qs.dgn PLOT DATE: 09-AUG-2012  
PROJECT LEADER: K. HIGGINS DRAWN BY: W. LAMMER  
DESIGNED BY: W. LAMMER CHECKED BY: J. SALVATORI  
QUANTITY SHEET 1 SHEET 4 OF 44

# QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
							ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
							500				500		HR	FLAGGERS	630.15				
										1	1		LS	FIELD OFFICE, ENGINEERS	631.10				
										1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
										1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
										3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
							1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
							820				820		LF	4 INCH WHITE LINE	646.20				
							770				770		LF	4 INCH YELLOW LINE	646.21				
									400		400		SY	GEOTEXTILE UNDER STONE FILL	649.31				
								200			200		SY	GEOTEXTILE FOR SILT FENCE	649.51				
								200			200		SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515				
								110			110		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61				
								50			50		LB	SEED	651.15				
								300			300		LB	FERTILIZER	651.18				
								1			1		TON	AGRICULTURAL LIMESTONE	651.20				
								1			1		TON	HAY MULCH	651.25				
								390			390		CY	TOPSOIL	651.35				
									140		140		SY	GRUBBING MATERIAL	651.40				
								1			1		LS	EPSC PLAN	652.10				
								48			48		HR	MONITORING EPSC PLAN	652.20				
								1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
								150			150		SY	TEMPORARY EROSION MATTING	653.20				
								60			60		CY	VEHICLE TRACKING PAD	653.35				
								950			950		LF	BARRIER FENCE	653.50				
							0.66				0.66		SF	TRAFFIC SIGNS, TYPE A	675.20				
							16				16		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
									40		40		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ)	900.608				
									80		80		LF	SPECIAL PROVISION (OBSTRUCTION REMOVAL FOR DRIVING PILES)	900.640				
									284		284		LF	SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS)(NEXT 28 D)	900.640				
									1		1		LS	SPECIAL PROVISION (REMOVAL OF TEMPORARY BRIDGE AND APPROACHES)	900.645				
										1	1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)	900.645				
										1	1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650				
										1	1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
									255.33		255.33		SY	SPECIAL PROVISION (MEMBRANE WATERPROOFING, SPRAY APPLIED)	900.675				
							380				380		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

PROJECT NAME: HANCOCK  
 PROJECT NUMBER: ER BRF 0174(16)  
 FILE NAME: s1lc210qs.dgn  
 PROJECT LEADER: K. HIGGINS  
 DESIGNED BY: W. LAMMER  
 QUANTITY SHEET 2  
 PLOT DATE: 09-AUG-2012  
 DRAWN BY: W. LAMMER  
 CHECKED BY: J. SALVATORI  
 SHEET 5 OF 44

\* 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS  
 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS  
 3" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IIS  
 VARIES SUBBASE OPTION

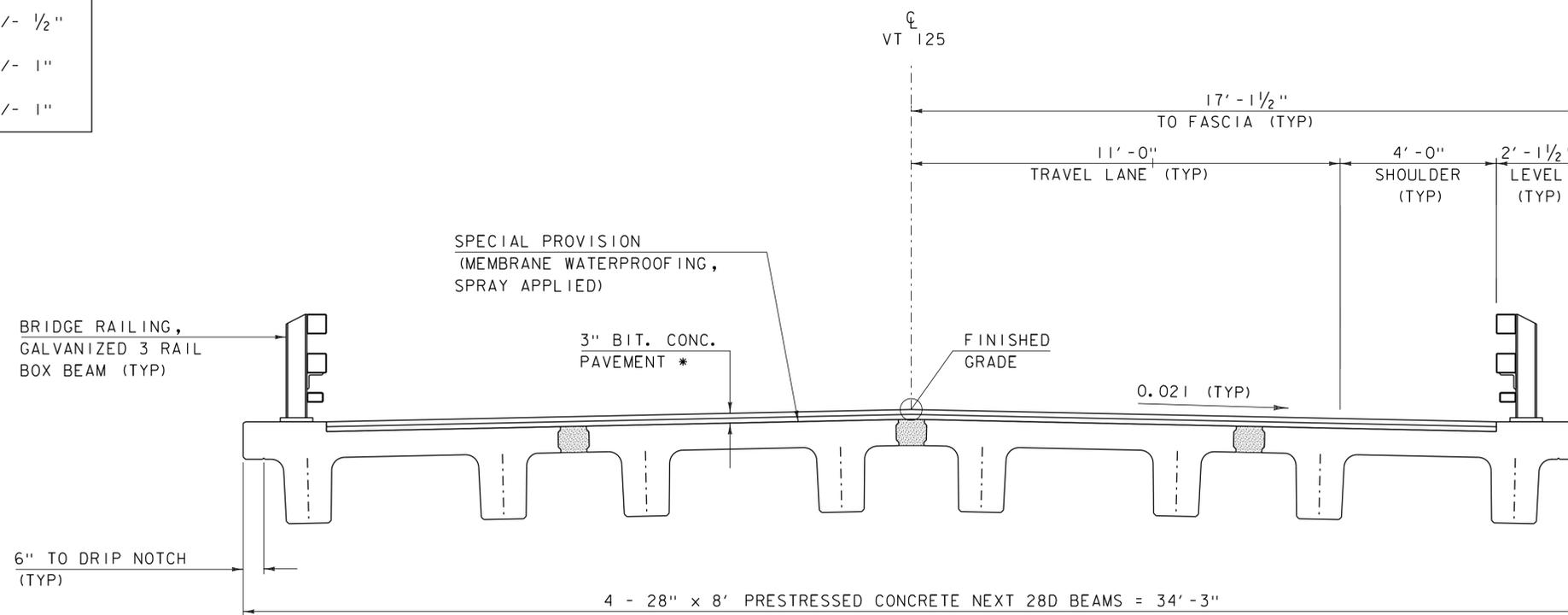


**ROADWAY TYPICAL SECTION**

SCALE 1/2" = 1'-0"

**MATERIAL TOLERANCES**  
 (IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	
	+/- 1"
SAND BORROW	
	+/- 1"



**BRIDGE TYPICAL SECTION**

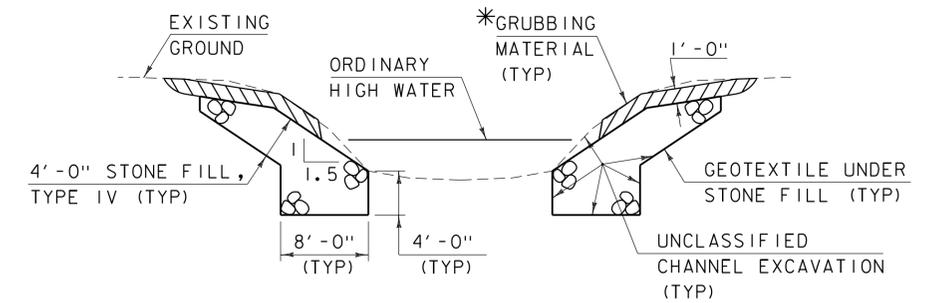
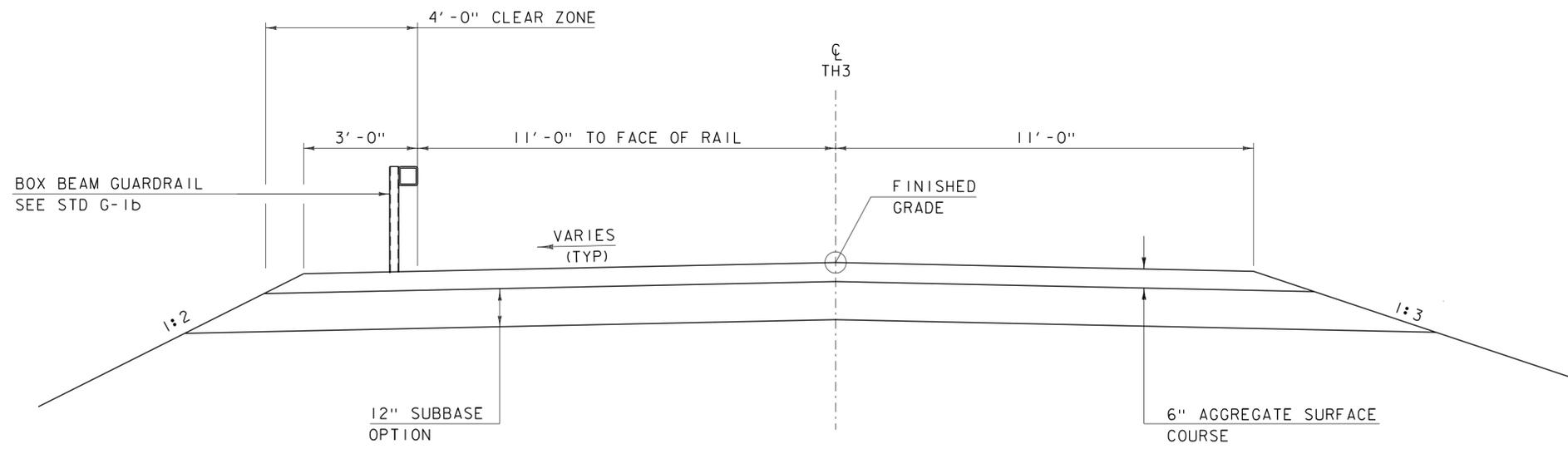
SCALE 1/2" = 1'-0"

\*\* 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS  
 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS

PROJECT NAME: HANCOCK  
 PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sllc210+yp.dgn  
 PROJECT LEADER: K.HIGGINS  
 DESIGNED BY: W. LAMMER  
 TYPICAL SECTIONS 1

PLOT DATE: 09-AUG-2012  
 DRAWN BY: W. LAMMER  
 CHECKED BY: J. SALVATORI  
 SHEET 6 OF 44



**TYPICAL CHANNEL SECTION**  
(NOT TO SCALE)

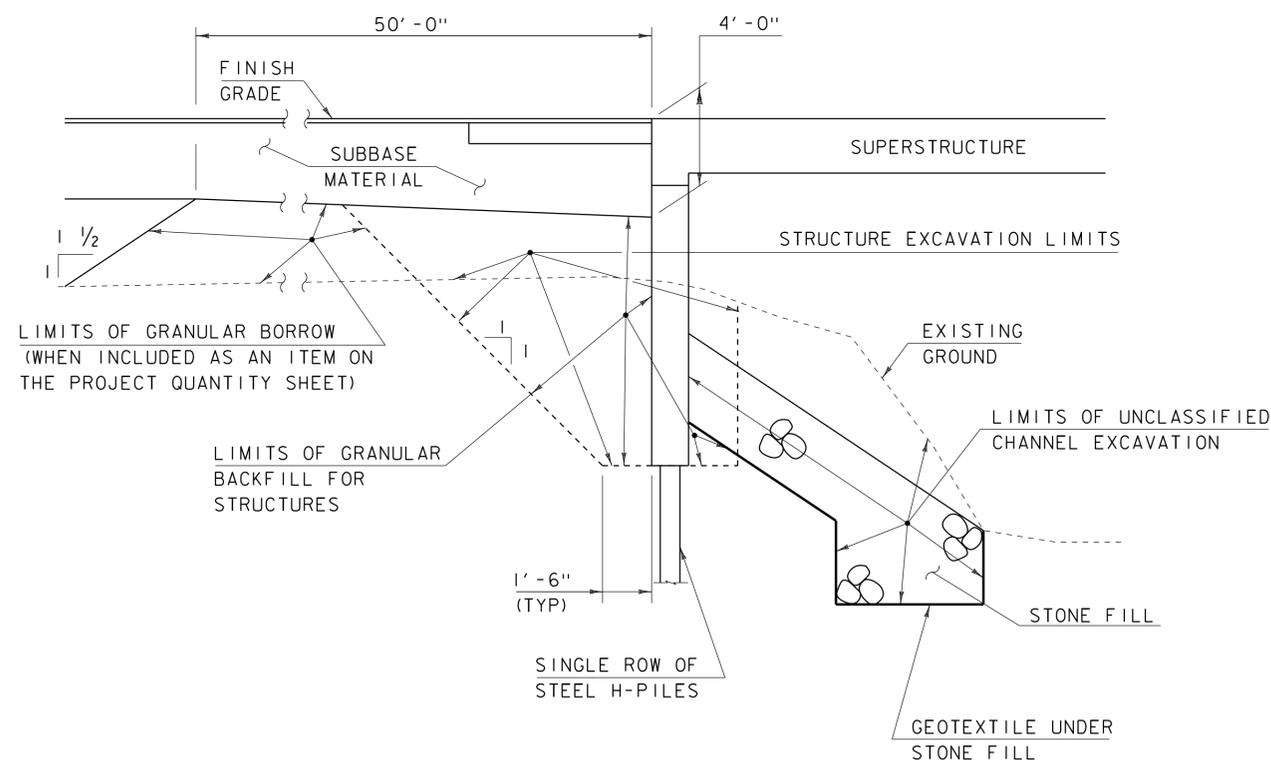
\*GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

WITH GUARDRAIL

**FASSETT HILL ROAD TYPICAL SECTION**

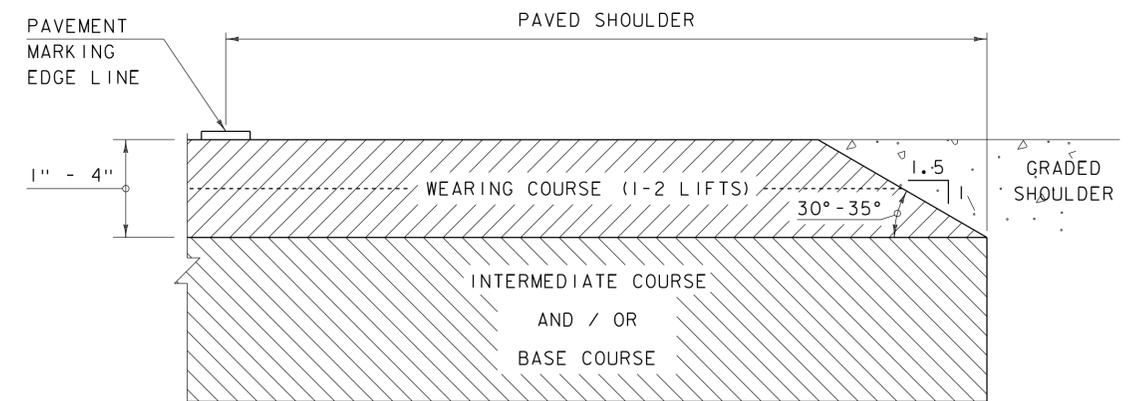
WITHOUT GUARDRAIL

SCALE 1/2" = 1'-0"



**TYPICAL INTEGRAL ABUTMENT SECTION**  
(NOT TO SCALE)

ACTUAL LIMITS OF STRUCTURE EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR. HOWEVER, ONLY THE EXCAVATION BETWEEN THE LIMITS SHOWN WILL BE PAID FOR UNDER ITEM 204.25 "STRUCTURE EXCAVATION". EXCAVATION BY THE CONTRACTOR OUTSIDE OF THESE LIMITS WILL BE AT THE EXPENSE OF THE CONTRACTOR.



**SAFETY EDGE DETAIL**  
(NOT TO SCALE)

NOTE: LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE CONTRACTOR'S CHOICE.

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sllc210TYP.dgn  
PROJECT LEADER: K. M. HIGGINS  
DESIGNED BY: W. LAMMER  
TYPICAL SECTIONS 2

PLOT DATE: 08-AUG-2012  
DRAWN BY: W. LAMMER  
CHECKED BY: K. M. HIGGINS  
SHEET 7 OF 44

GPS CONTROL POINTS

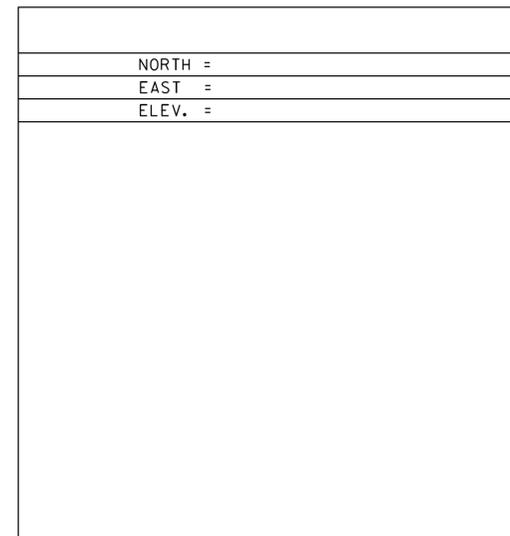
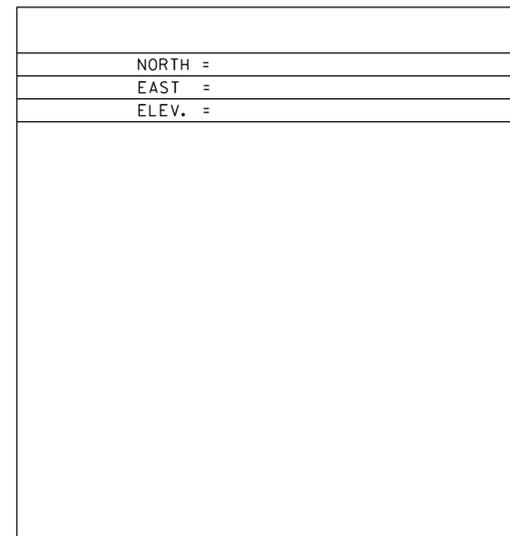
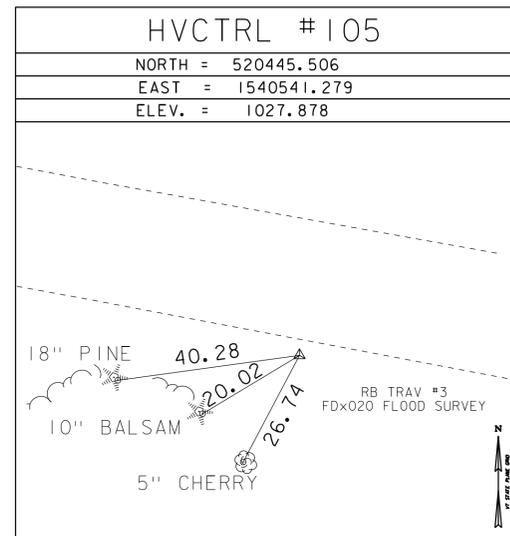
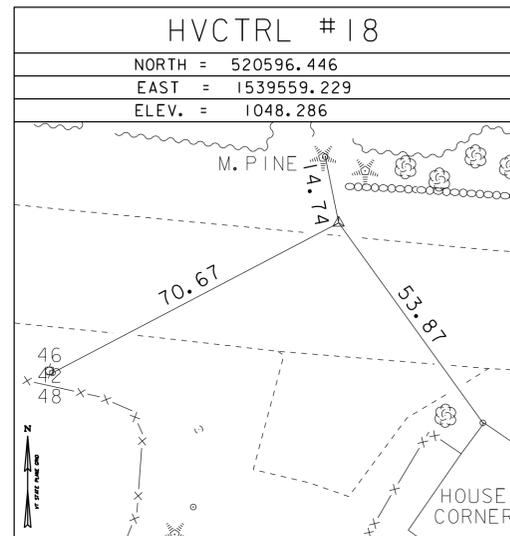
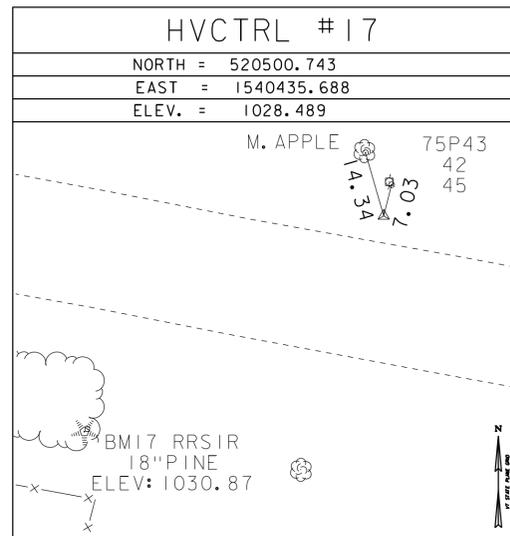
HVCTRL #1  
 CHESAPEAKE AZ  
 NORTH = 519927.584  
 EAST = 1550533.162  
 ELEV. = 913.226

HVCTRL #2  
 CHESAPEAKE  
 NORTH = 517723.725  
 EAST = 1550889.382  
 ELEV. = 894.026

GENERAL LOCATION, HANCOCK, VT.  
 TO REACH FROM THE INTERSECTION OF VT.ROUTE 100 AND VT.ROUTE 125 IN HANCOCK GO SOUTH ALONG VT.ROUTE 100 FOR ABOUT 25 M (82.0 FT) TO THE NORTH END OF THE VT.ROUTE 100 BRIDGE OVER ROBBINS BRANCH AND THE SITE OF THE MARK ON THE RIGHT SET IN THE TOP OF THE ABUTMENT AT THE NORTHWEST CORNER OF THE BRIDGE. THE MARK IS 5.6 M (18.4 FT) WEST OF AND ABOUT LEVEL WITH THE CENTERLINE OF VT.ROUTE 100, 0.4 M (1.3 FT) NORTH OF THE SOUTH FACE OF THE ABUTMENT, AND 0.4 M (1.3 FT) SOUTH OF A FIBERGLASS WITNESS POST

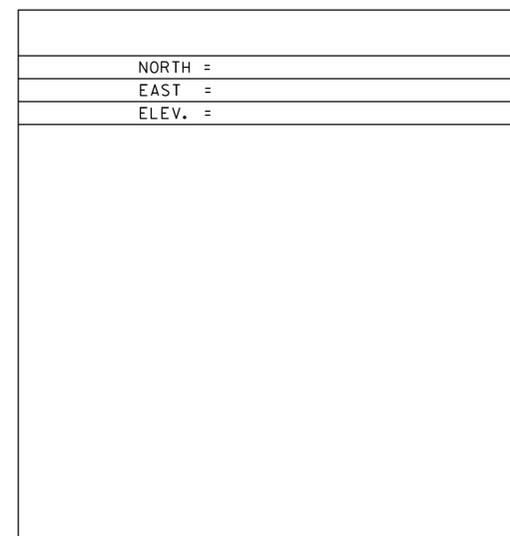
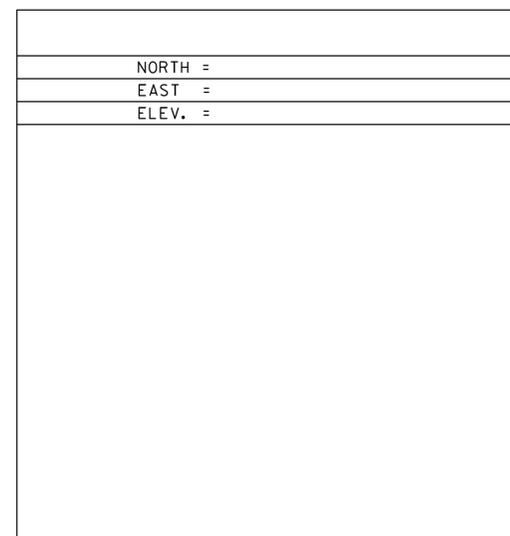
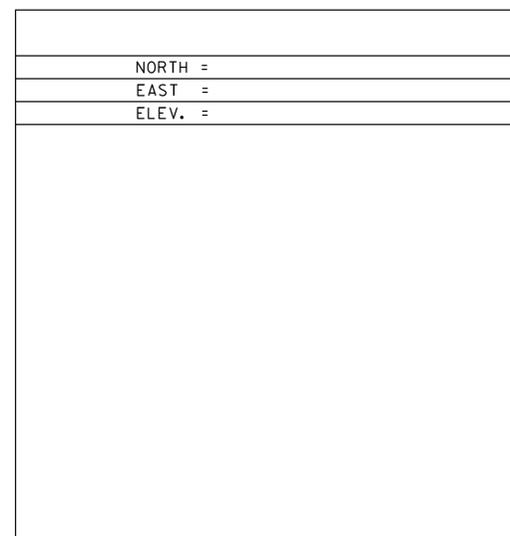
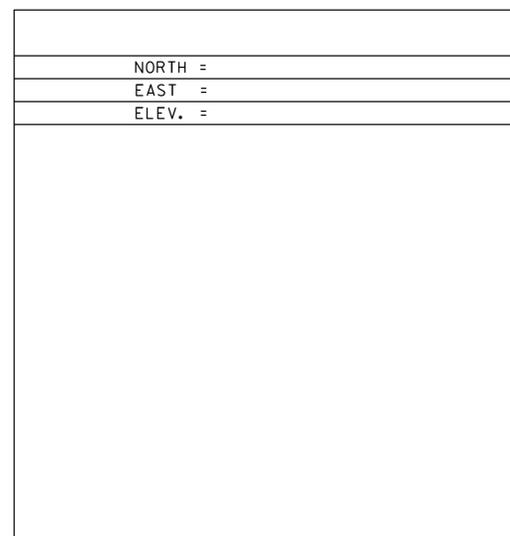
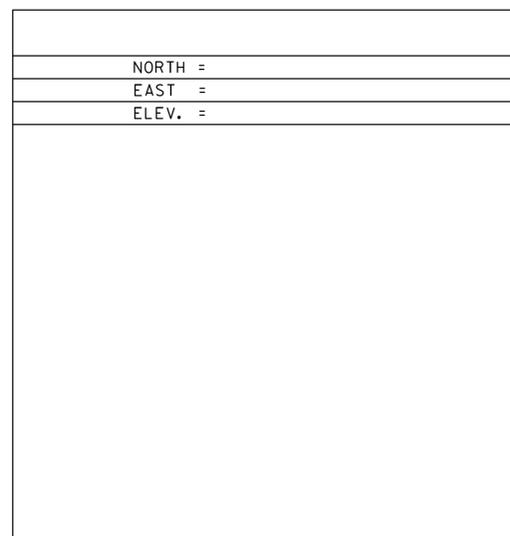
GENERAL LOCATION, HANCOCK, VT.  
 TO REACH FROM THE INTERSECTION OF VT.ROUTE 100 AND VT.ROUTE 125 IN HANCOCK GO SOUTH ALONG VT.ROUTE 100 FOR 0.4 MI (0.6 KM) TO THE MARK ON THE LEFT. ABOUT 200 FEET (61.0 M) NORTH OF THE HANCOCK FIRE DEPT. THE MARK IS SET 2 CM BELOW THE GROUND SURFACE IN THE TOP OF A 30 CM DIAMETER CONCRETE MONUMENT SET 1.4 M (4.6 FT) DEEP. IT IS 3.6 M (11.8 FT) EAST OF AND ABOUT 0.2 M (0.7 FT) LOWER THAN THE EAST EDGE OF PAVEMENT OF VT.ROUTE 100, 17.2 M (56.4 FT) SOUTH OF POLE NO.88/2, 3.6 M (11.8 FT) NORTHWEST OF THE SOUTHWEST CORNER OF A 1.3 M (4.3 FT) HIGH CHAINLINK FENCE SURROUNDING A RECREATIONAL AREA, 11.2 M (36.7 FT) NORTH OF A 0.5 M (1.6 FT) SQUARE DROP INLET, AND 1.3 M (4.3 FT) EAST OF THE CHAINLINK FENCE AND A FIBERGLASS WITNESS POST.

TRAVERSE TIES



\*MAIN TRAVERSE COMPLETED 10/30/2011 [SEE 10C252T ]BY L.ORVIS P.C. & G.HITCHCOCK

ALIGNMENT TIES

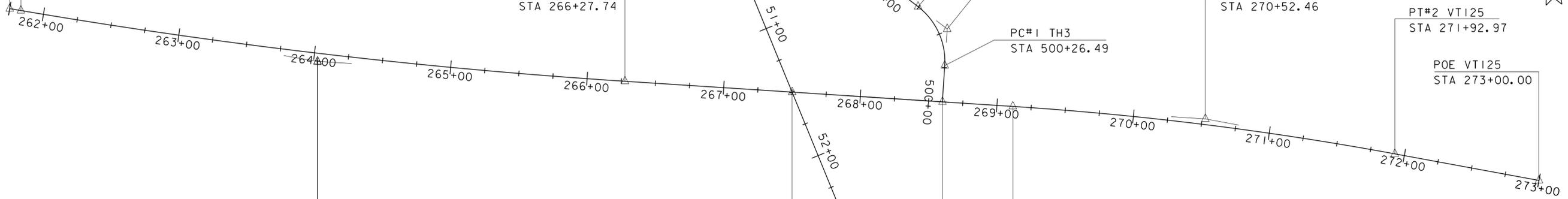


DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83 (CORS)
ADJUSTMENT COMPASS

PROJECT NAME: HANCOCK
PROJECT NUMBER: ER-BRF 017 (16)
FILE NAME: survey\XIC210+i.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: W. LAMMER
TIE SHEET
PLOT DATE: 08-AUG-2012
DRAWN BY: R. BULLOCK
CHECKED BY: W. LAMMER
SHEET 8 OF 44

POB VT125  
STA 261+75.00

PC#1 VT125  
STA 261+77.95



PI#1 VT125  
STA 264+03.05

PT#1 VT125  
STA 266+27.74

STA 267+50.00 VT125 =  
STA 51+50.00 CHANNEL  
DELTA = 64°-0"

POE CHANNEL  
STA 53+00.00

PC#1 TH3  
STA 500+26.49

PI#1 TH3  
STA 500+53.21

PT#1 TH3  
STA 500+75.57

PC#2 TH3  
STA 501+56.89

PI#2 TH3  
STA 501+95.81

PT#2 TH3  
STA 502+34.48

PI#2 VT125  
STA 270+52.46

PT#2 VT125  
STA 271+92.97

POE VT125  
STA 273+00.00

PC#2 VT125  
STA 269+11.62

STA 268+60.00 VT 125 =  
POB TH3 STA 500+00  
DELTA = 90°-0"

### ALIGNMENT

SCALE 1" = 40' -0"  
40 0 40

Project Name: Proposed Description: Hancock ER BRF 0241(16) Horizontal Alignment Name: VT125 Pro Description: VT125 Mainline Style: align1			
	STATION	NORTHING	EASTING
Element: Linear			
POB ( 5)	261+75.00	520624.9738	1539218.0897
PC ( 6)	261+77.95	520624.4768	1539220.9992
Tangent Direction:	S 80°18'24.49" E		
Tangent Length:	2.95		
Element: Circular			
PC ( 6)	261+77.95	520624.4768	1539220.9992
PI ( )	264+03.05	520586.5766	1539442.8830
CC ( 7)	266+27.74	524863.0877	1539945.0002
PT ( 30)	266+27.74	520572.0506	1539667.5113
Radius:	4300.00		
Design Speed(mph):	55.00		
Superelevation:	8.00%		
Delta:	5°59'35.51" Left		
Degree of Curvature(Arc):	1°19'56.86"		
Length:	449.78		
Tangent:	225.10		
Chord:	449.58		
Middle Ordinate:	5.88		
External:	5.89		
Tangent Direction:	S 80°18'24.49" E		
Radial Direction:	S 9°41'35.51" W		
Chord Direction:	S 83°18'12.25" E		
Radial Direction:	S 3°42'00.00" W		
Tangent Direction:	S 86°18'00.00" E		
Element: Linear			
PT ( 30)	266+27.74	520572.0506	1539667.5113
PC ( 1)	269+11.62	520553.7309	1539950.8034
Tangent Direction:	S 86°18'00.00" E		
Tangent Length:	283.88		
Element: Circular			
PC ( 1)	269+11.62	520553.7309	1539950.8034
PI ( )	270+52.46	520544.6425	1540091.3452
CC ( 2)	271+92.97	518158.7334	1539795.9259
PT ( 9)	271+92.97	520519.1786	1540229.8595
Radius:	2400.00		
Design Speed(mph):	55.00		
Superelevation:	8.00%		
Delta:	6°43'00.09" Right		
Degree of Curvature(Arc):	2°23'14.37"		
Length:	281.35		
Tangent:	140.84		
Chord:	281.19		
Middle Ordinate:	4.12		
External:	4.13		
Tangent Direction:	S 86°18'00.00" E		
Radial Direction:	S 3°42'00.00" W		
Chord Direction:	S 82°56'29.96" E		
Radial Direction:	S 10°25'00.09" W		
Tangent Direction:	S 79°34'59.91" E		
Element: Linear			
PT ( 9)	271+92.97	520519.1786	1540229.8595
POE ( 10)	273+00.00	520499.8259	1540335.1313
Tangent Direction:	S 79°34'59.91" E		
Tangent Length:	107.04		

Project Name: Proposed Description: Hancock ER BRF 0241(16) Horizontal Alignment Name: TH3 Pro Description: Fassett Hill Road Style: Default			
	STATION	NORTHING	EASTING
Element: Linear			
POB ( 45)	500+00.00	520557.0573	1539899.3646
PC ( 46)	500+26.49	520583.4966	1539901.0744
Tangent Direction:	N 3°42'00.16" E		
Tangent Length:	26.49		
Element: Circular			
PC ( 46)	500+26.49	520583.4966	1539901.0744
PI ( )	500+53.21	520610.1579	1539902.7985
CC ( 48)	500+75.57	520586.7233	1539851.1786
PT ( 49)	500+75.57	520626.4093	1539881.5927
Radius:	50.00		
Delta:	56°14'04.87" Left		
Degree of Curvature(Arc):	114°35'29.61"		
Length:	49.07		
Tangent:	26.72		
Chord:	47.13		
Middle Ordinate:	5.90		
External:	6.69		
Tangent Direction:	N 3°42'00.16" E		
Radial Direction:	S 86°17'59.84" E		
Chord Direction:	N 24°25'02.27" W		
Radial Direction:	N 37°27'55.29" E		
Tangent Direction:	N 52°32'04.71" W		
Element: Linear			
PT ( 49)	500+75.57	520626.4093	1539881.5927
PC ( 69)	501+56.89	520675.8758	1539817.0459
Tangent Direction:	N 52°32'04.71" W		
Tangent Length:	81.32		
Element: Circular			
PC ( 69)	501+56.89	520675.8758	1539817.0459
PI ( )	501+95.81	520699.5472	1539786.1581
CC ( 71)	520993.3644	1540060.3586	
PT ( 72)	502+34.48	520728.7283	1539760.4123
Radius:	400.00		
Delta:	11°06'48.21" Right		
Degree of Curvature(Arc):	14°19'26.20"		
Length:	77.59		
Tangent:	38.92		
Chord:	77.46		
Middle Ordinate:	1.88		
External:	1.89		
Tangent Direction:	N 52°32'04.71" W		
Radial Direction:	N 37°27'55.29" E		
Chord Direction:	N 46°58'40.60" W		
Radial Direction:	N 48°34'43.50" E		
Tangent Direction:	N 41°25'16.50" W		
Element: Linear			
PT ( 72)	502+34.48	520728.7283	1539760.4123
POE ( 68)	502+50.00	520740.3690	1539750.1420
Tangent Direction:	N 41°25'16.50" W		
Tangent Length:	15.52		

Project Name: Proposed Description: Hancock ER BRF 0241(16) Horizontal Alignment Name: Chan1 Description: Channel of Stream Style: aligns			
	STATION	NORTHING	EASTING
Element: Linear			
POB ( 3)	50+00.00	520702.9332	1539732.5635
PC ( 4)	53+00.00	520425.3938	1539846.4578
Tangent Direction:	S 22°18'42.64" E		
Tangent Length:	300.00		

VT 125 CURVE (1)  
Δ = 5°59'36"  
D = 1°19'57"  
R = 4300.00'  
T = 225.10'  
L = 449.78'  
E = 5.89'

VT 125 CURVE (2)  
Δ = 6°42'51"  
D = 2°23'14"  
R = 2400.00'  
T = 140.78'  
L = 281.24'  
E = 4.13'

FASSETT HILL RD CURVE (1)  
Δ = 56°14'05"  
D = 114°35'30"  
R = 50.00'  
T = 26.72'  
L = 49.07'  
E = 6.69'

FASSETT HILL RD CURVE (2)  
Δ = 11°06'48"  
D = 14°19'26"  
R = 400.00'  
T = 38.92'  
L = 77.59'  
E = 1.89'

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sllc210sta\_bdr.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: J. SALVATORI  
ALIGNMENT

PLOT DATE: 08-AUG-2012  
DRAWN BY: K. FRIEDLAND  
CHECKED BY: J. SALVATORI  
SHEET 9 OF 44

4 INCH WHITE LINE  
 STA 266+00 - 268+35 LT  
 STA 268+75 - 270+25 LT  
 STA 266+00 - 270+25 RT

4 INCH YELLOW LINE (DOUBLE CENTERLINE)  
 STA 266+00 - 268+35 LT/RT  
 STA 268+75 - 270+25 LT/RT

CLEANING CULV. PIPE, IN-PLACE (0 TO 24 IN., INCL.)  
 STA 266+08.65 - 266+68.65 LT

REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS III  
 STA 266+08.65 LT

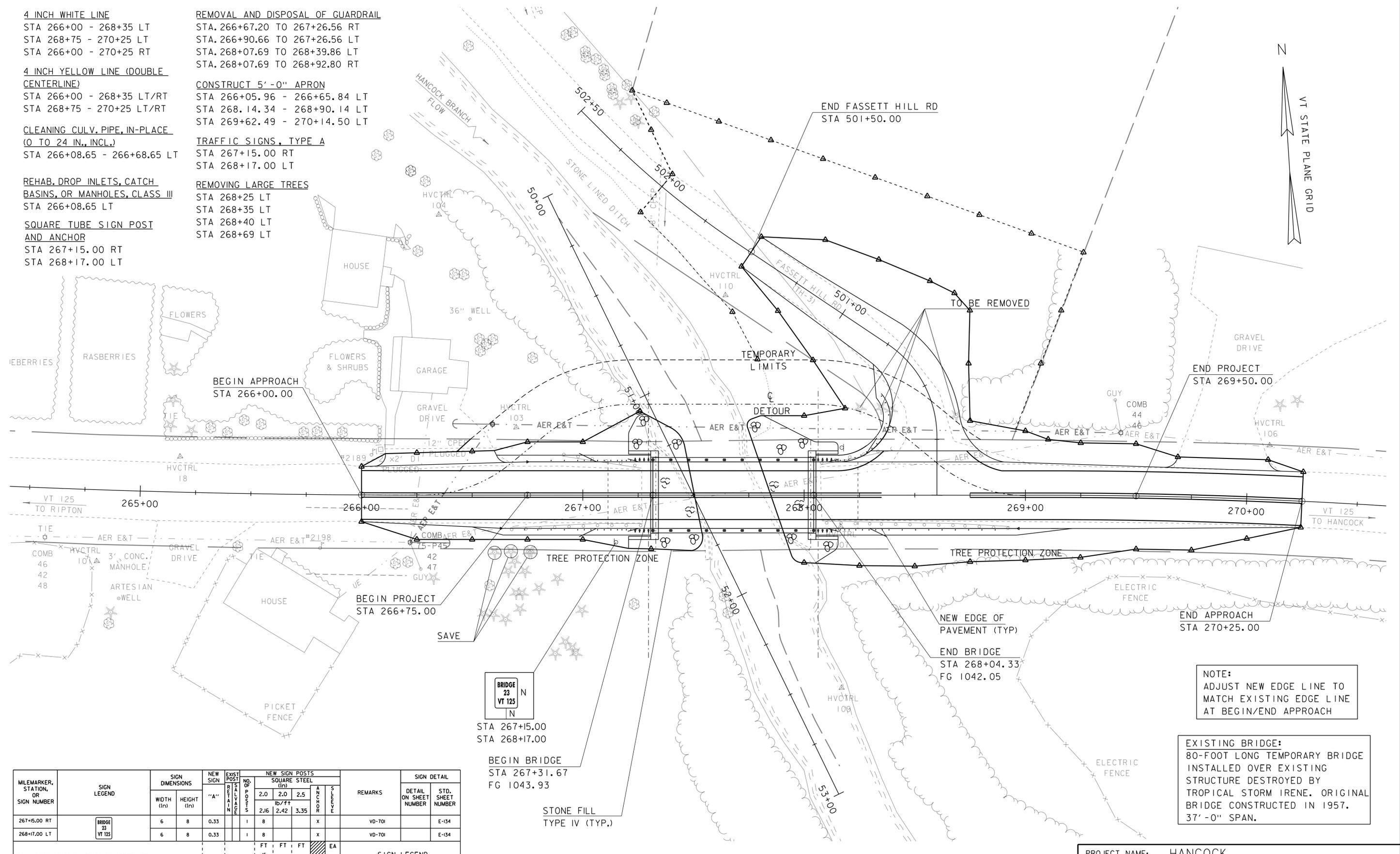
SQUARE TUBE SIGN POST AND ANCHOR  
 STA 267+15.00 RT  
 STA 268+17.00 LT

REMOVAL AND DISPOSAL OF GUARDRAIL  
 STA. 266+67.20 TO 267+26.56 RT  
 STA. 266+90.66 TO 267+26.56 LT  
 STA. 268+07.69 TO 268+39.86 LT  
 STA. 268+07.69 TO 268+92.80 RT

CONSTRUCT 5'-0" APRON  
 STA 266+05.96 - 266+65.84 LT  
 STA 268.14.34 - 268+90.14 LT  
 STA 269+62.49 - 270+14.50 LT

TRAFFIC SIGNS, TYPE A  
 STA 267+15.00 RT  
 STA 268+17.00 LT

REMOVING LARGE TREES  
 STA 268+25 LT  
 STA 268+35 LT  
 STA 268+40 LT  
 STA 268+69 LT



VT 125 TO RIPTON

VT 125 TO HANCOCK

END PROJECT  
 STA 269+50.00

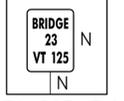
BEGIN APPROACH  
 STA 266+00.00

BEGIN PROJECT  
 STA 266+75.00

END APPROACH  
 STA 270+25.00

NEW EDGE OF PAVEMENT (TYP)

END BRIDGE  
 STA 268+04.33  
 FG 1042.05



STA 267+15.00  
 STA 268+17.00

BEGIN BRIDGE  
 STA 267+31.67  
 FG 1043.93

STONE FILL  
 TYPE IV (TYP.)

NOTE:  
 ADJUST NEW EDGE LINE TO MATCH EXISTING EDGE LINE AT BEGIN/END APPROACH

EXISTING BRIDGE:  
 80-FOOT LONG TEMPORARY BRIDGE INSTALLED OVER EXISTING STRUCTURE DESTROYED BY TROPICAL STORM IRENE. ORIGINAL BRIDGE CONSTRUCTED IN 1957. 37'-0" SPAN.

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS		NEW SIGN	EXIST. SIGN	NEW SIGN POSTS				REMARKS	SIGN DETAIL		
		WIDTH (in)	HEIGHT (in)			NO. OF POSTS	NO. OF SQUARE STEEL	NO. OF SQUARE STEEL	NO. OF SQUARE STEEL		NO. OF SQUARE STEEL	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
267+15.00 RT	BRIDGE 23 VT 125	6	8	0.33		1	8	2.0	2.0	2.5		VD-701	E-134
268+17.00 LT	BRIDGE 23 VT 125	6	8	0.33		1	8	2.16	2.42	3.35		VD-701	E-134
TOTALS				0.66		2	16	4.16	4.42	5.85			

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."

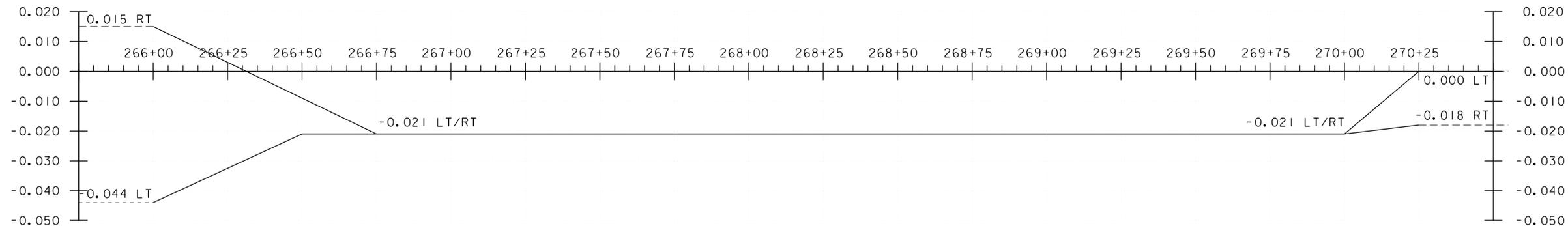
SIGN LEGEND  
 N = NEW  
 SHS = STANDARD HIGHWAY SIGNS (MUTCD)

LAYOUT SHEET

SCALE 1" = 20'-0"  
 20 0 20

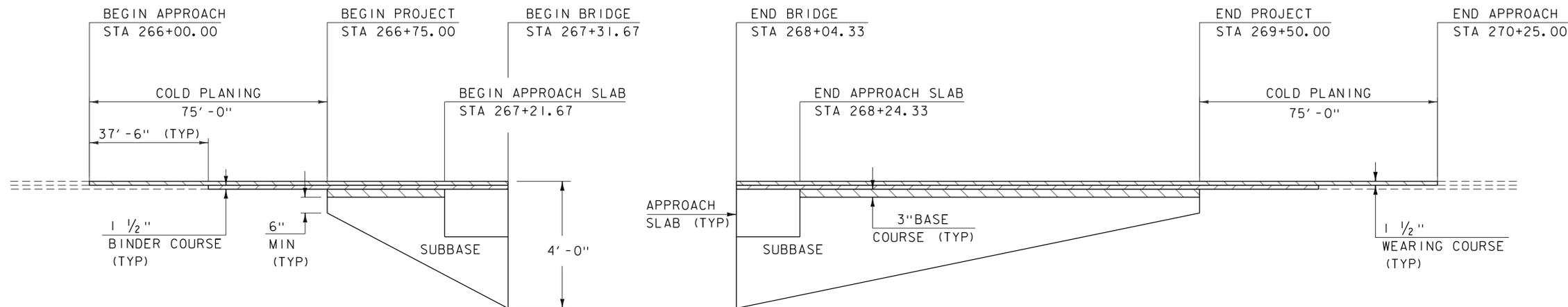
PROJECT NAME: HANCOCK  
 PROJECT NUMBER: ER BRF 0174(16)  
 FILE NAME: sl1c210bdr.dgn  
 PROJECT LEADER: K. HIGGINS  
 DESIGNED BY: J. SALVATORI  
 LAYOUT SHEET

PLOT DATE: 10-AUG-2012  
 DRAWN BY: J. SALVATORI  
 CHECKED BY: W. LAMMER  
 SHEET 10 OF 44



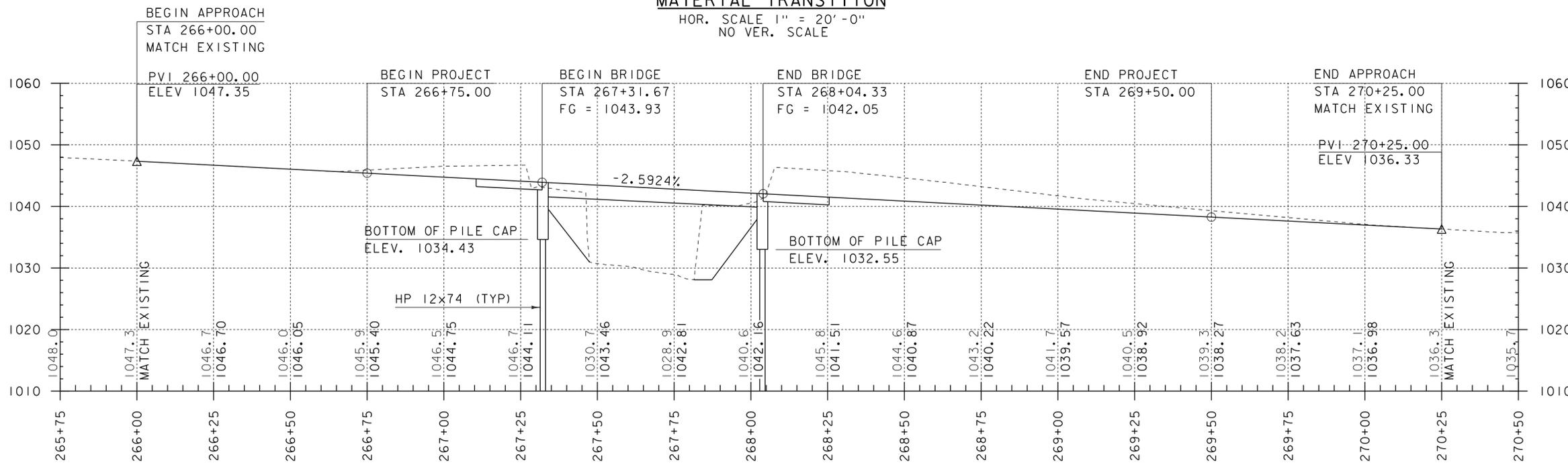
**BANKING DIAGRAM**

HOR. SCALE 1" = 20'-0"  
NO VER. SCALE



**MATERIAL TRANSITION**

HOR. SCALE 1" = 20'-0"  
NO VER. SCALE



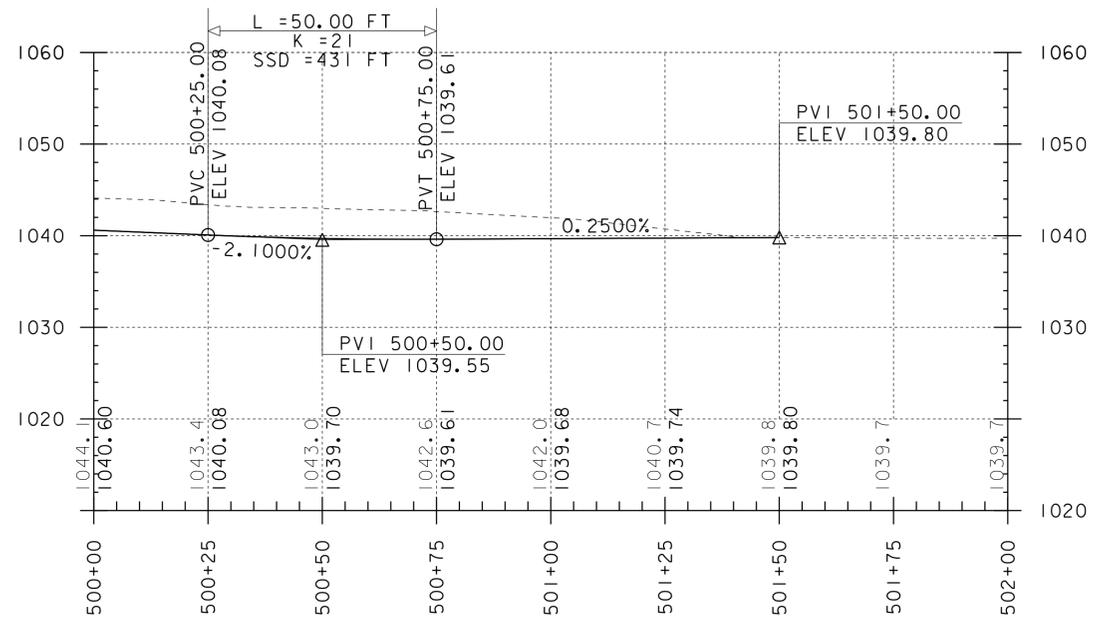
**VT 125 PROFILE**

HOR. SCALE 1" = 20'-0"  
VER. SCALE 1" = 10'-0"

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

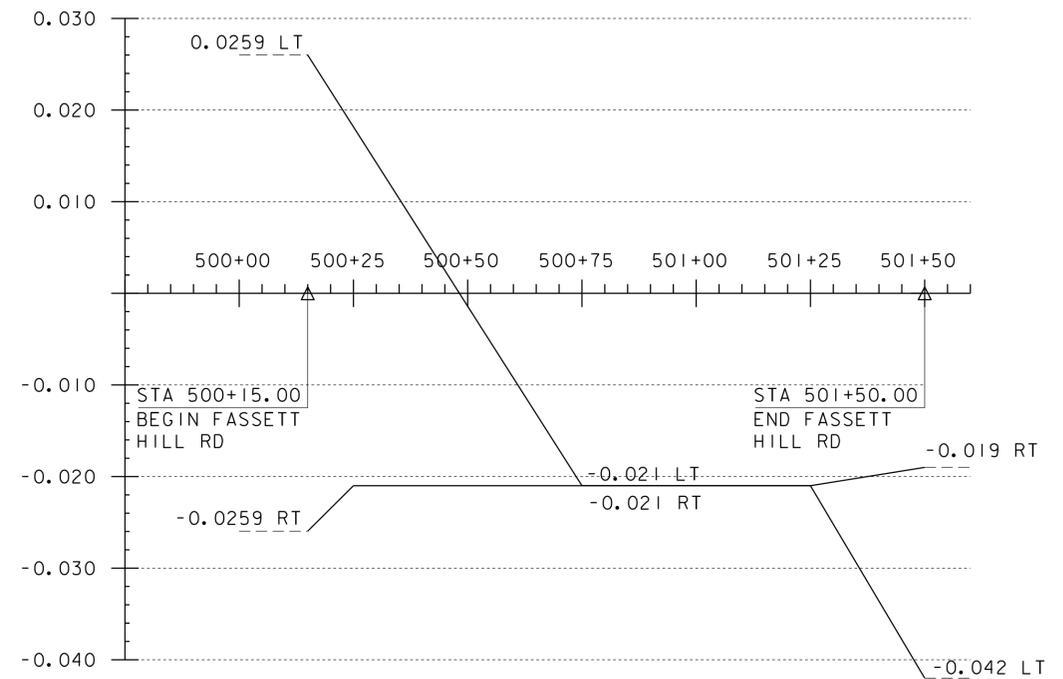
THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISH GRADES ALONG THE PROPOSED ALIGNMENT.

PROJECT NAME:	HANCOCK
PROJECT NUMBER:	ER BRF 0174(16)
FILE NAME:	slc210pro.dgn
PROJECT LEADER:	K. HIGGINS
DESIGNED BY:	J. SALVATORI
MAINLINE PROFILE	
PLOT DATE:	10-AUG-2012
DRAWN BY:	J. SALVATORI
CHECKED BY:	W. LAMMER
SHEET	II OF 44



**FASSETT HILL RD PROFILE**

HOR. SCALE 1" = 20' - 0"  
 VER. SCALE 1" = 10' - 0"



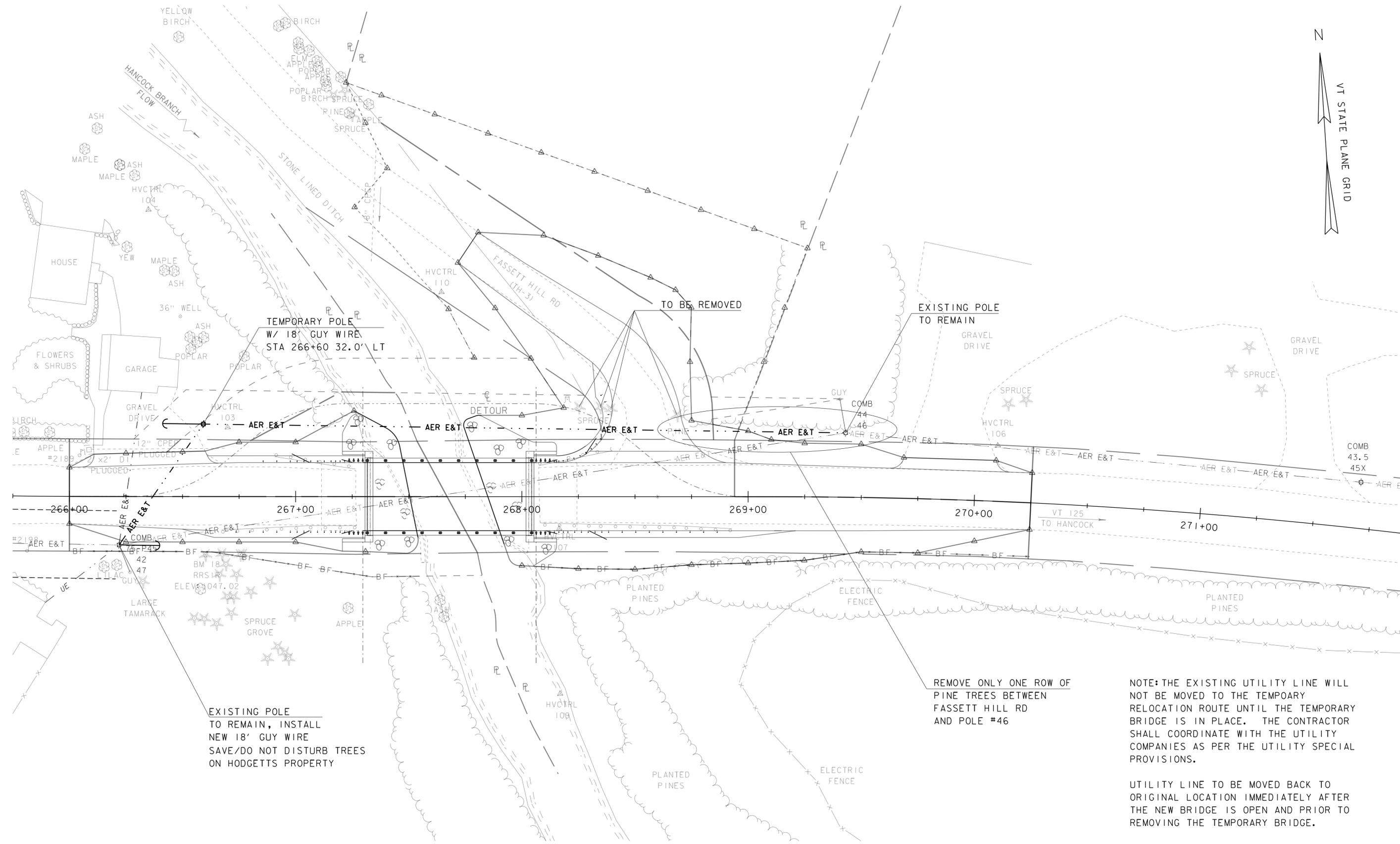
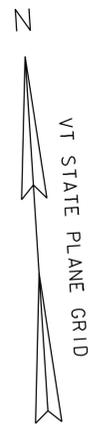
**FASSETT HILL RD BANKING DIAGRAM**

HOR. SCALE 1" = 20' - 0"  
 NO VER. SCALE

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISH GRADES ALONG THE PROPOSED ALIGNMENT.

PROJECT NAME: HANCOCK	PLOT DATE: 08-AUG-2012
PROJECT NUMBER: ER BRF 0174(16)	DRAWN BY: J. SALVATORI
FILE NAME: sllc210pro.dgn	CHECKED BY: W. LAMMER
PROJECT LEADER: K. HIGGINS	SHEET 12 OF 44
DESIGNED BY: J. SALVATORI	
FASSETT HILL ROAD PROFILE	



EXISTING POLE TO REMAIN, INSTALL NEW 18' GUY WIRE SAVE/DO NOT DISTURB TREES ON HODGETTS PROPERTY

REMOVE ONLY ONE ROW OF PINE TREES BETWEEN FASSETT HILL RD AND POLE #46

NOTE: THE EXISTING UTILITY LINE WILL NOT BE MOVED TO THE TEMPORARY RELOCATION ROUTE UNTIL THE TEMPORARY BRIDGE IS IN PLACE. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES AS PER THE UTILITY SPECIAL PROVISIONS.

UTILITY LINE TO BE MOVED BACK TO ORIGINAL LOCATION IMMEDIATELY AFTER THE NEW BRIDGE IS OPEN AND PRIOR TO REMOVING THE TEMPORARY BRIDGE.

**PROPOSED UTILITIES**

SCALE 1" = 20'-0"  
 20 0 20

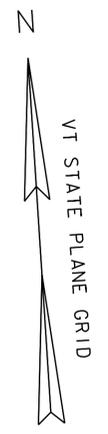
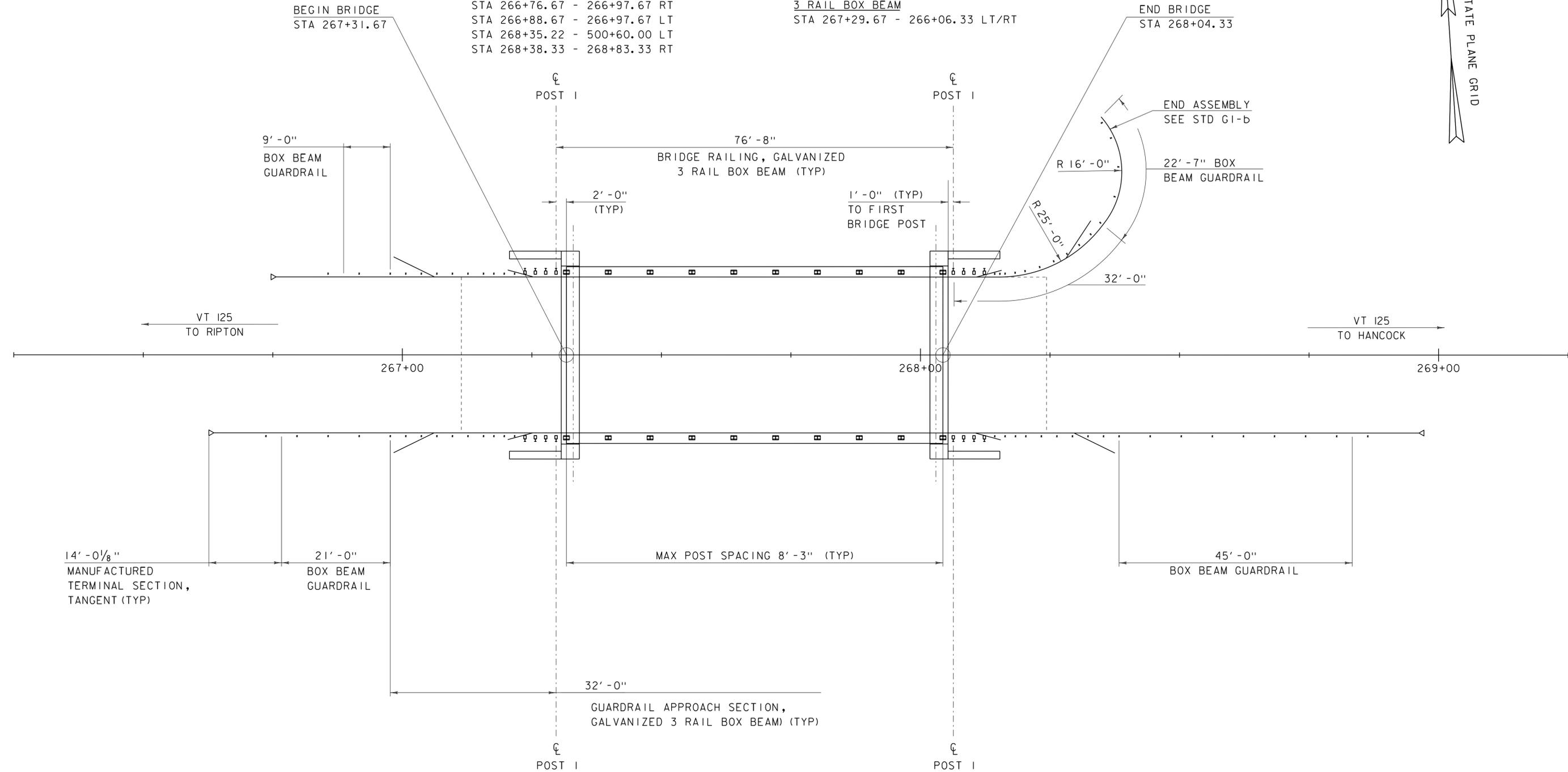
PROJECT NAME: HANCOCK	
PROJECT NUMBER: ER BRF 0174(16)	
FILE NAME: sllc210u+1.dgn	PLOT DATE: 08-AUG-2012
PROJECT LEADER: K. HIGGINS	DRAWN BY: J. SALVATORI
DESIGNED BY: J. SALVATORI	CHECKED BY: W. LAMMER
PROPOSED UTILITIES	SHEET 13 OF 44

MANUFACTURED TERMINAL SECTION, TANGENT  
 STA 266+62.67 - 266+76.67 RT  
 STA 266+74.67 - 266+88.67 LT  
 STA 268+83.33 - 268+97.33 RT

GUARDRAIL APPROACH SECTION,  
 GALVANIZED 3 RAIL BOX BEAM  
 STA 266+97.67 - 267+29.67 LT/RT  
 STA 268+06.33 - 268+35.22 LT  
 STA 268+06.33 - 268+38.33 RT

BOX BEAM GUARDRAIL  
 STA 266+76.67 - 266+97.67 RT  
 STA 266+88.67 - 266+97.67 LT  
 STA 268+35.22 - 500+60.00 LT  
 STA 268+38.33 - 268+83.33 RT

BRIDGE RAILING, GALVANIZED  
 3 RAIL BOX BEAM  
 STA 267+29.67 - 266+06.33 LT/RT



RAIL LAYOUT SHEET

SCALE 1" = 10'-0"  
 10 0 10

PROJECT NAME: HANCOCK	
PROJECT NUMBER: ER BRF 0174(16)	
FILE NAME: sllc210rail.dgn	PLOT DATE: 08-AUG-2012
PROJECT LEADER: K. HIGGINS	DRAWN BY: J. SALVATORI
DESIGNED BY: J. SALVATORI	CHECKED BY: B. LAMMER
RAIL LAYOUT SHEET	SHEET 14 OF 44

**SOIL CLASSIFICATION**

**AASHTO**

A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

**ROCK QUALITY DESIGNATION**

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

**SHEAR STRENGTH**

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

**CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY**

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

**COMMONLY USED SYMBOLS**

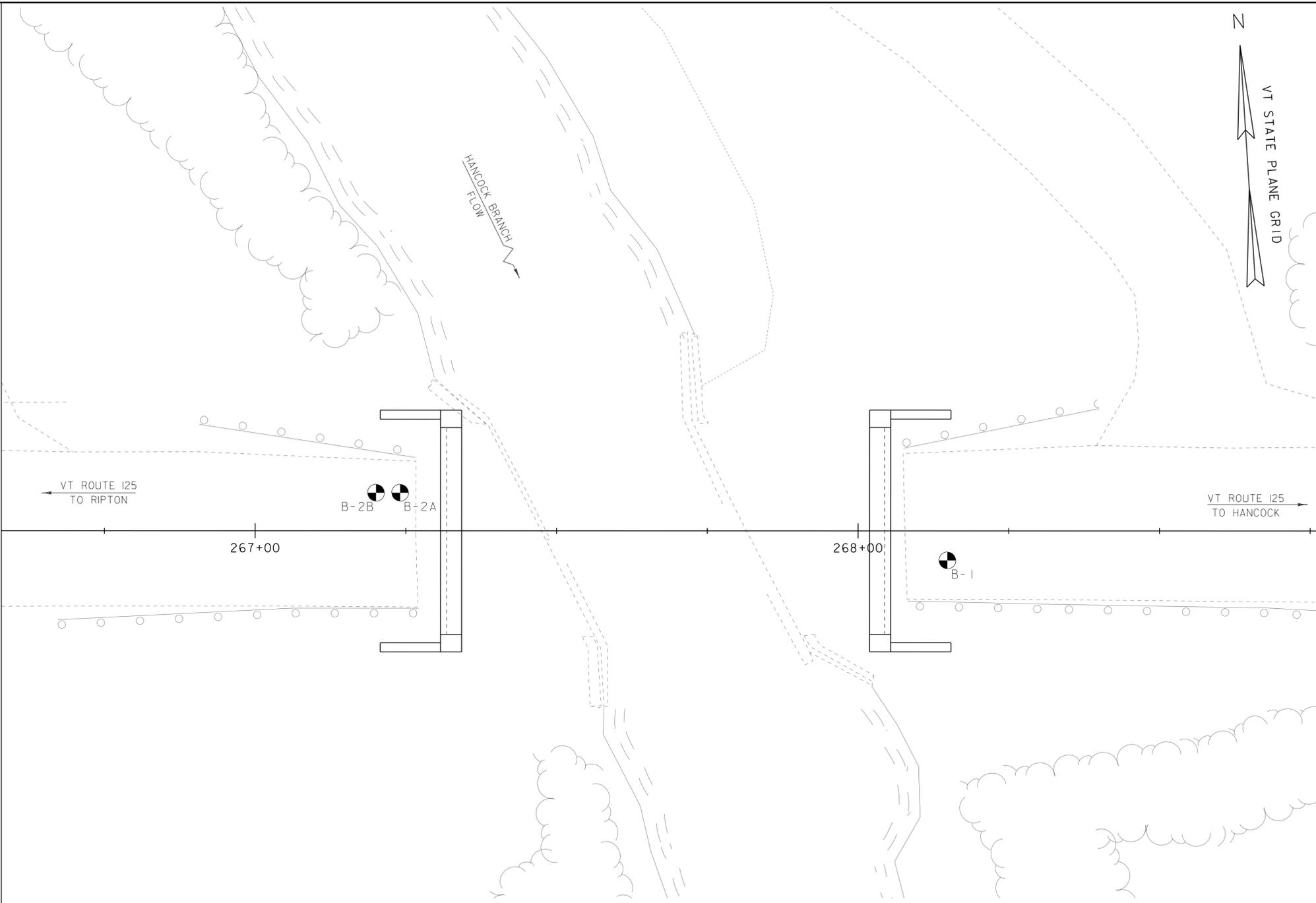
▼	Water Elevation
⊕	Standard Penetration Boring
⊗	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O. D. Sampler 1 3/8" I. D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 3/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
1/2 Rec.	Percent Recovery
ROD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

**COLOR**

blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gr'y	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

**DEFINITIONS (AASHTO)**

<b>BEDROCK (LEDGE)</b> - Rock in its native location of indefinite thickness.	<b>VARVED</b> - Alternate layers of silt and clay.
<b>BOULDER</b> - A rock fragment with an average dimension > 12 inches.	<b>HARDPAN</b> - Extremely dense soil, cemented layer, not softened when wet.
<b>COBBLE</b> - Rock fragments with an average dimension between 3 and 12 inches.	<b>MUCK</b> - Soft organic soil (containing > 10% organic material).
<b>GRAVEL</b> - Rounded particles of rock < 3" and > 0.075" (#10 sieve).	<b>MOISTURE CONTENT</b> - Weight of water divided by dry weight of soil.
<b>SAND</b> - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).	<b>FLOWING SAND</b> - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
<b>SILT</b> - Soil < 0.0025" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.	<b>STRIKE</b> - Angle from magnetic north to line of intersection of bed with a horizontal plane.
<b>CLAY</b> - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.	<b>DIP</b> - Inclination of bed with a horizontal plane.



**BORING LAYOUT**

SCALE 1" = 10' - 0"  
10 0 10

**GENERAL NOTES**

- The subsurface explorations shown herein were made between 02/13/12 and 02/16/12 by GeoDesign, Inc. for the Agency.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
- Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

**BORING CHART**

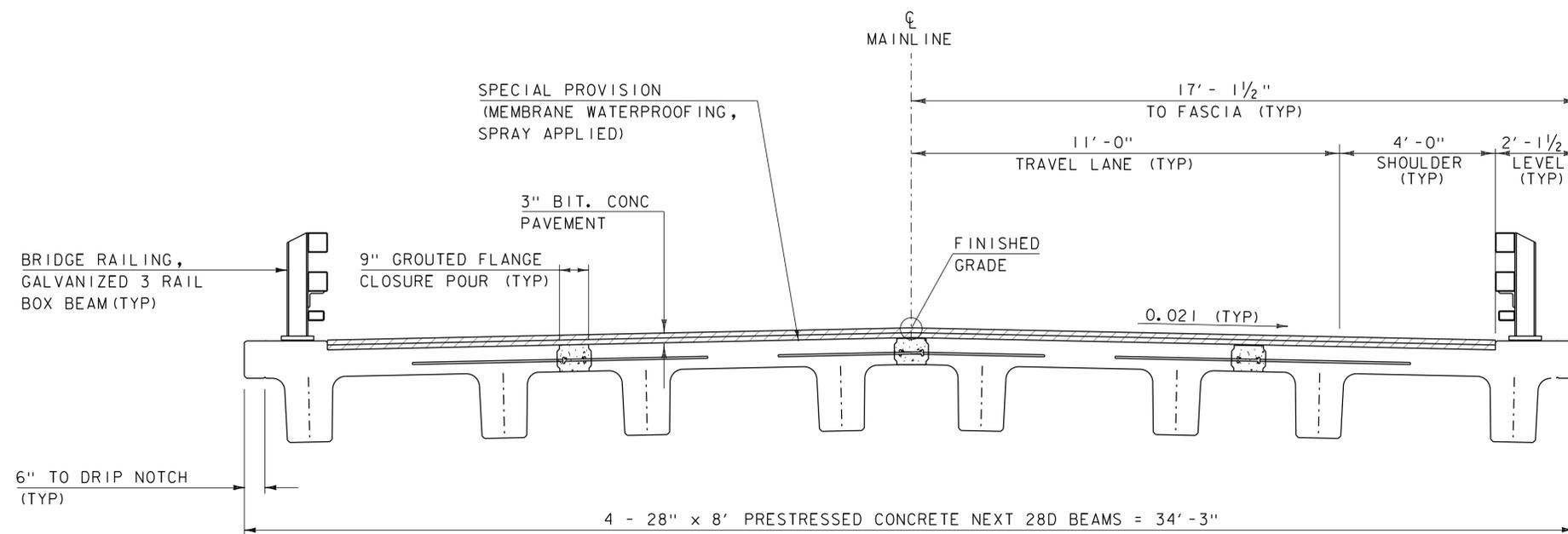
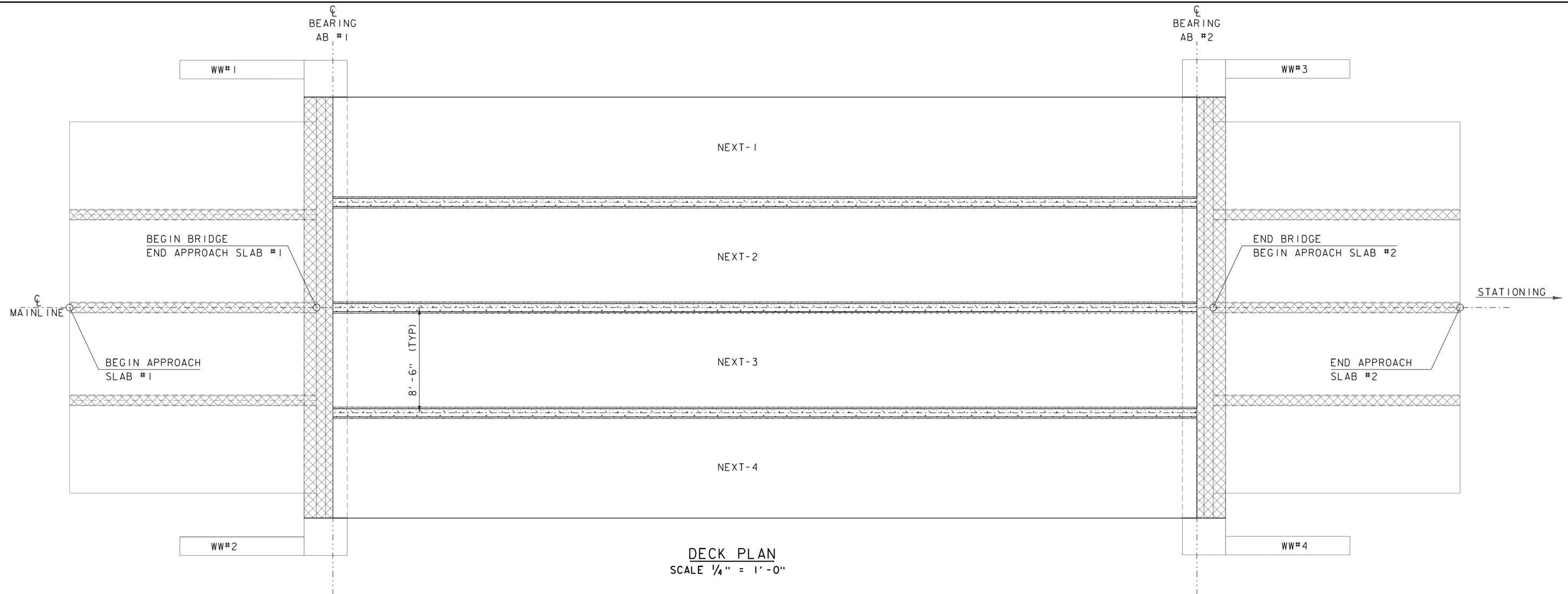
HOLE NO.	APPROX. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B-1	268+16	4' RT	1046.5'	994'
B-2A	267+19	5' LT	1046.5'	N/A
B-2B	267+23	5' LT	1046.5'	993.5'

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sllc210bor.dgn PLOT DATE: 08-AUG-2012  
PROJECT LEADER: K. HIGGINS DRAWN BY: J. SALVATORI  
DESIGNED BY: W. LAMMER CHECKED BY: W. LAMMER  
BORING LAYOUT SHEET SHEET 15 OF 44



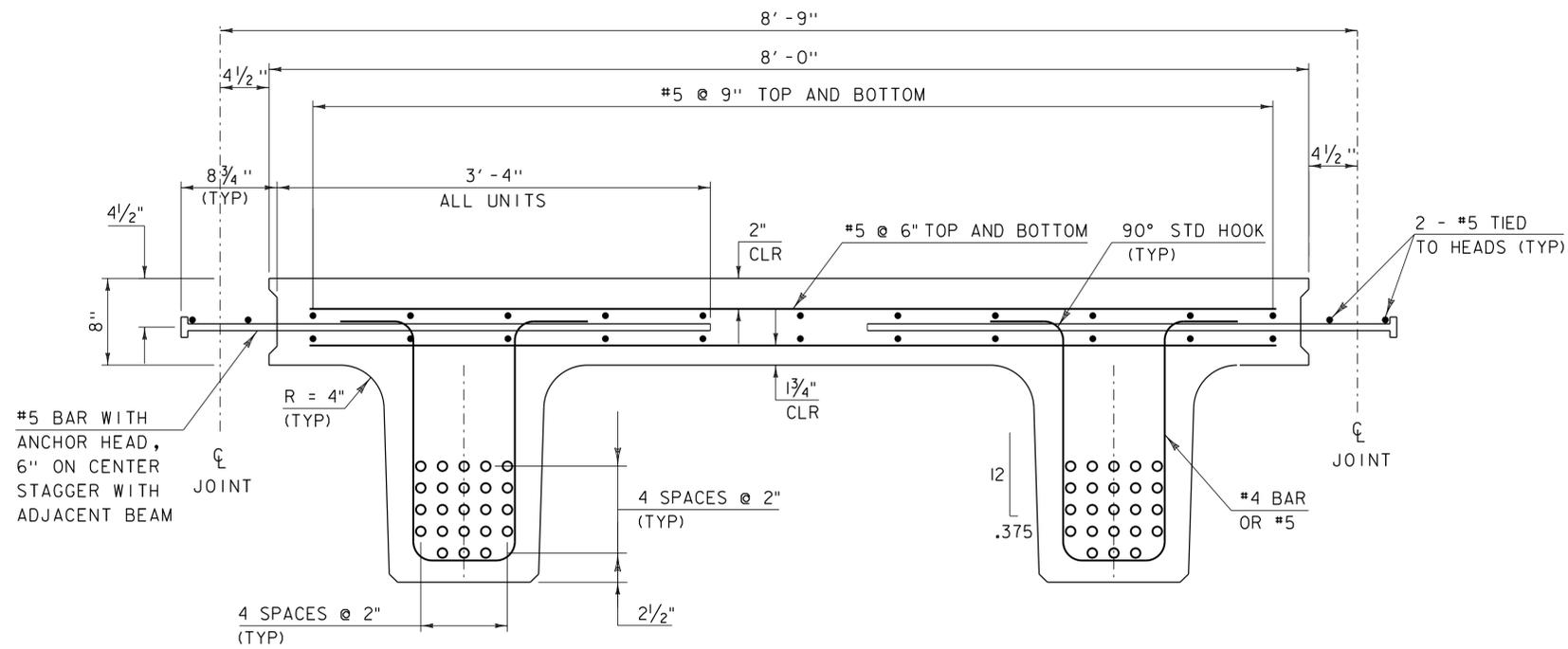




**LEGEND**

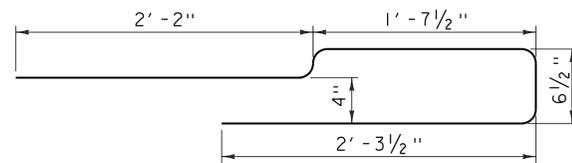
-  SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)
-  HPC = SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)
-  GROUTING SHEAR KEYS

PROJECT NAME:	HANCOCK	PLOT DATE:	09-AUG-2012
PROJECT NUMBER:	ER BRF 0174(16)	DRAWN BY:	J. SALVATORI
FILE NAME:	slc210sup.dgn	DESIGNED BY:	W. LAMMER
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	W. LAMMER
FRAMING PLAN		SHEET	18 OF 44



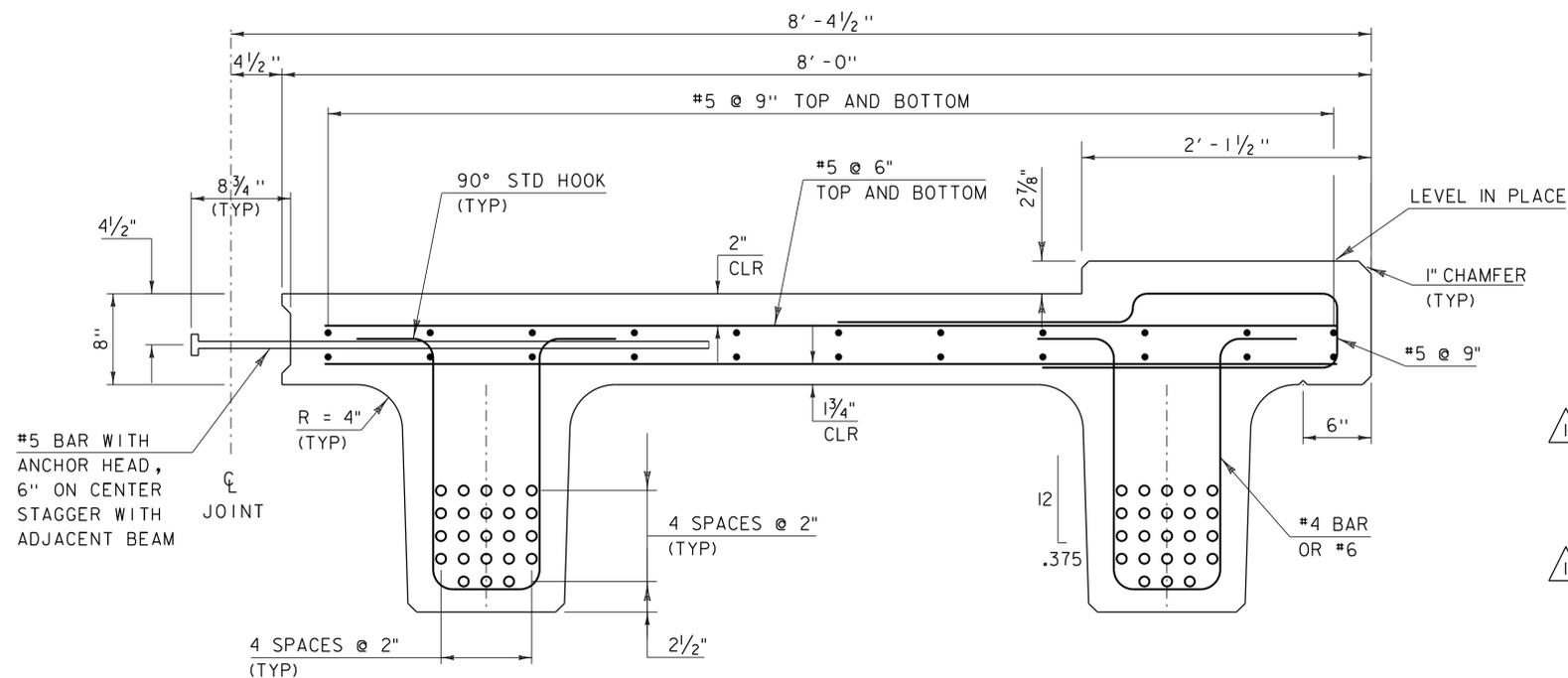
**UNITS 2 & 3**  $\Delta$

SCALE: 1 1/2" = 1'-0"



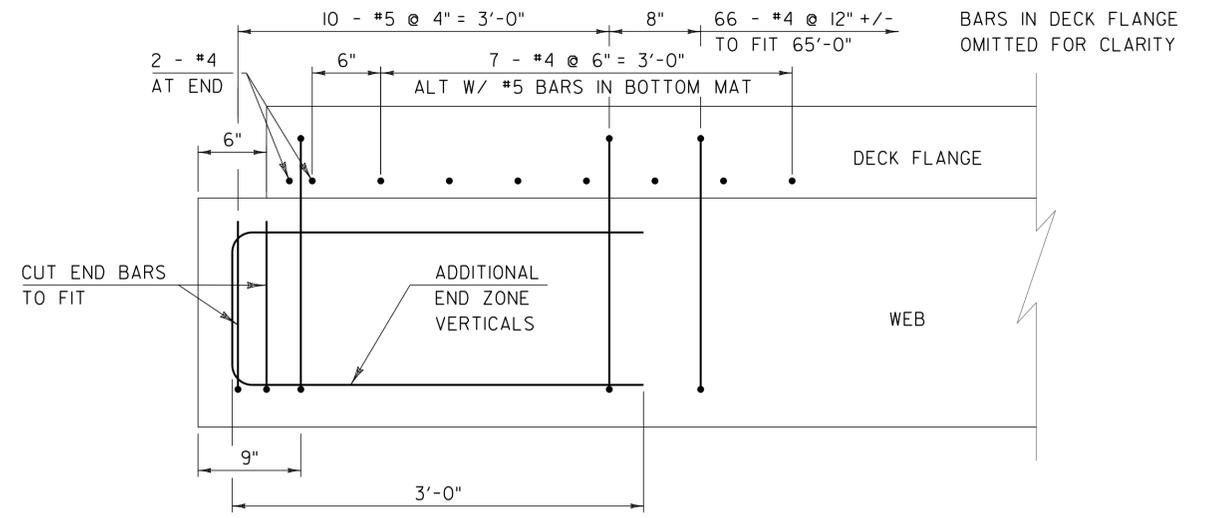
**CURB BAR**

SCALE: 1 1/2" = 1'-0"



**UNITS 1 & 4**  $\Delta$

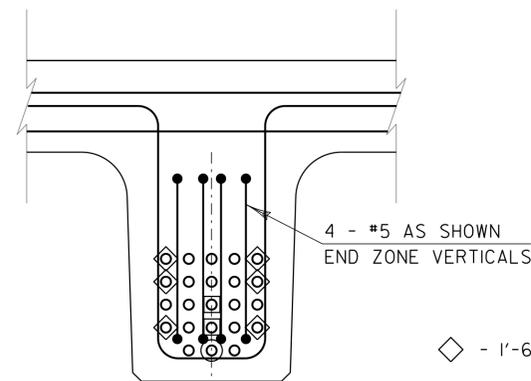
SCALE: 1 1/2" = 1'-0"



**ADDITIONAL END BEAM REINFORCING**

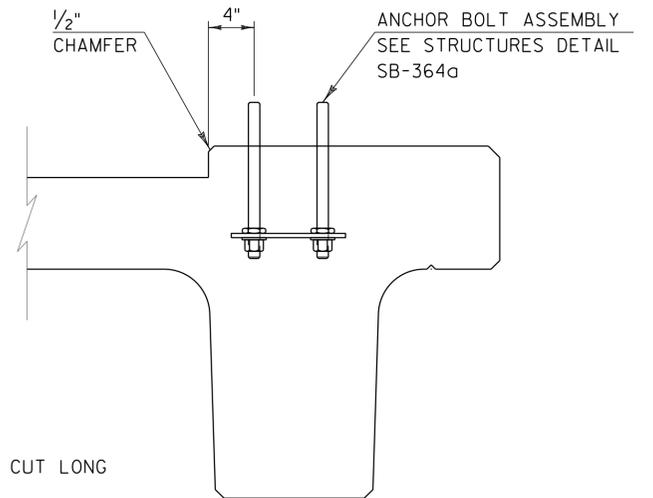
**LONGITUDINAL SECTION**  $\Delta$

SCALE: 1 1/2" = 1'-0"



**BEAM SECTION**  $\Delta$

SCALE: 1 1/2" = 1'-0"



**END SECTION**

SCALE: 1 1/2" = 1'-0"

- $\diamond$  - 1'-6" STRAND CUT LONG
- $\circ$  - DEBONDED 4'
- $\square$  - DEBONDED 6'

$\Delta$  REVISED 9-7-12

$\Delta$  L<sub>NEXT</sub> = 71 FT.  
SKEW = 90°

$\Delta$  NOTES:

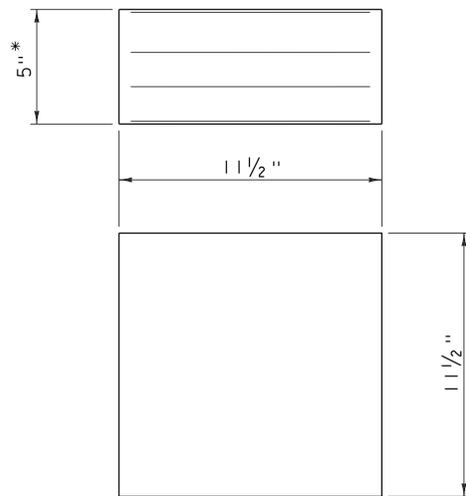
1. LEAVE SIX STRANDS 1'-6" LONG AS INDICATED. TIE STRANDS TO HORIZONTAL #5 REINFORCING IN DECK CLOSURE POUR.
2. REINFORCING STEEL SHALL MEET THE REQUIREMENTS OF SECTION 507, LEVEL 11.

- REVISED NOTES
- NUMBERED END ZONE VERTICALS IN BEAM SECTION
- REVISED BAR SIZE AND QUANTITY IN LONGITUDINAL SECTION
- ADDED BARS TIED TO HEADS
- ADDED NEXT BEAM LENGTH AND SKEW
- REVISED STRAND PATTERN

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sl1c210sup.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: W. LAMMER  
NEXT BEAM TYPICAL SECTIONS

PLOT DATE: 07-SEP-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 19 OF 44



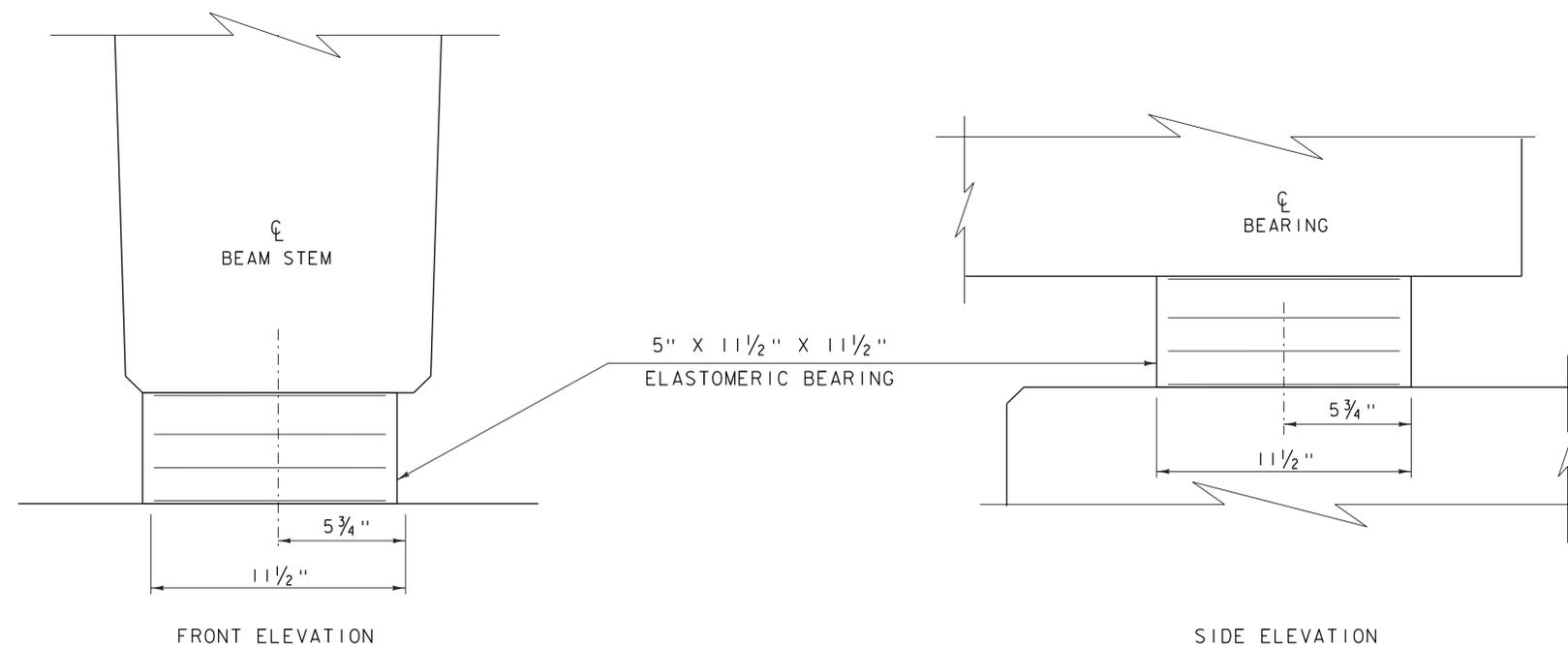
**ELASTOMERIC BEARING DETAIL**

SCALE 3" = 1'-0"

- \* 2 - 1/8" EXTERIOR LAYERS OF ELASTOMER
- 3 - 1 1/2" INTERIOR LAYERS OF ELASTOMER
- 4 - 1/16" STEEL REINFORCING PLATES

**BEARING NOTES**

1. BEARINGS SHALL CONFORM TO THE APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731.
2. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMER SHALL BE STEEL MEETING THE REQUIREMENTS OF SUBSECTION 714.02. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.
3. STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM 1/8" EDGE SEAL OF ELASTOMER INTEGRAL WITH BEARING OVER ALL INTERNAL PLATES.
4. THE ELASTOMER WAS DESIGNED WITH A SHEAR MODULUS OF 100 PSI +/- 15%
5. THE CONCRETE UNDER THE BEARING DEVICE SHALL BE LEVEL.
6. THE CONTRACTOR IS ADVISED TO HAVE A MINIMUM OF 16 - 1/4"x12 1/2"x12 1/2" GALVANIZED STEEL SHIMS AVAILABLE FOR USE FOR ELEVATION ADJUSTMENTS UPON THE SETTING OF THE SUPERSTRUCTURE UNITS. THE SHIMS SHALL BE FABRICATED ACCORDING TO SECTION 531 AND SHALL BE INCLUDED UNDER ITEM 531.11, "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD".

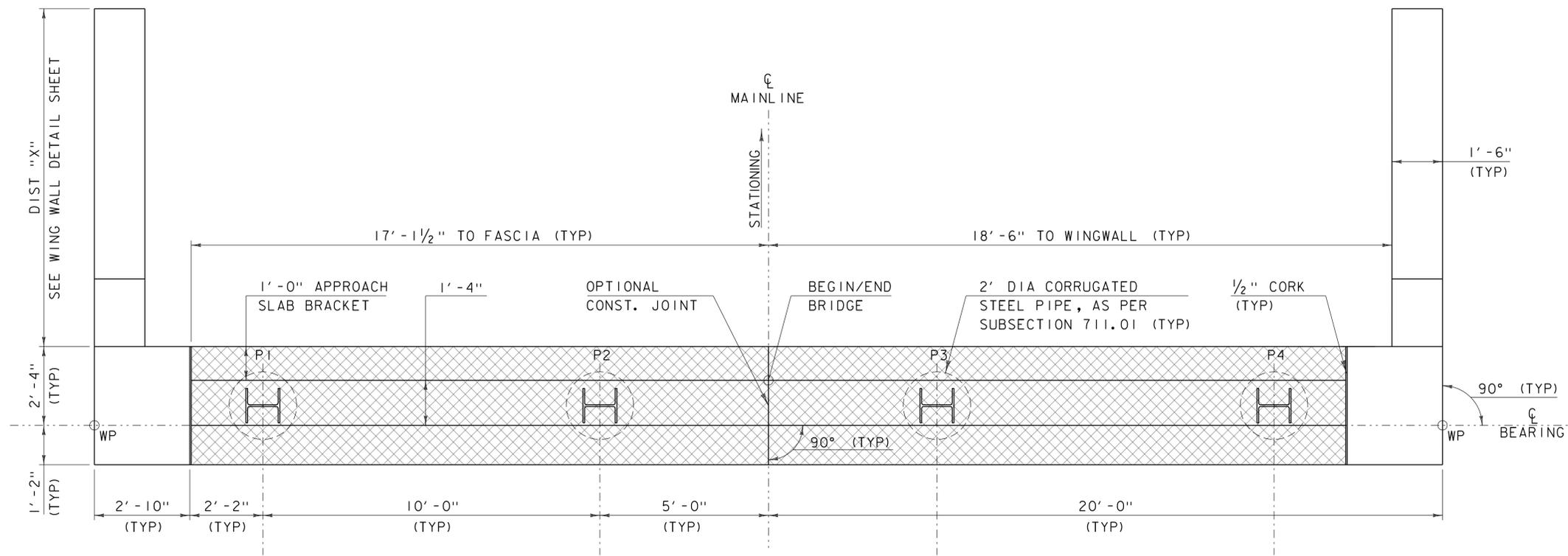


**ELASTOMERIC BEARING DETAILS**

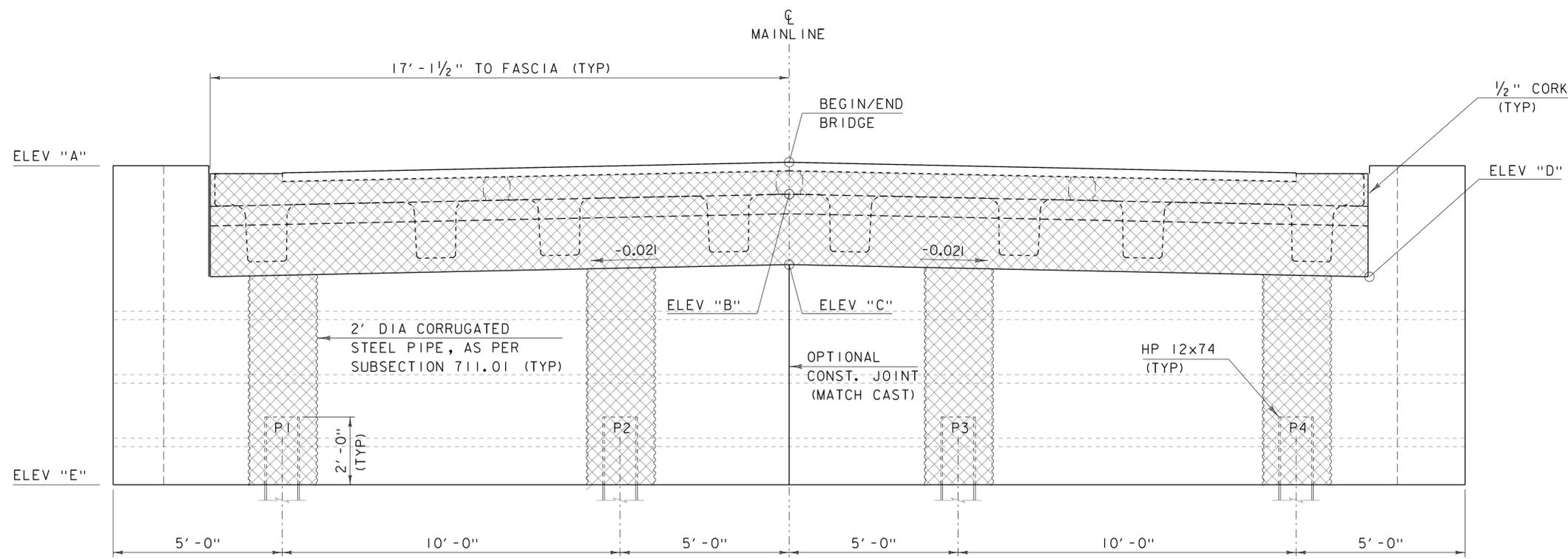
SCALE 3" = 1'-0"

PROJECT NAME: HANCOCK	
PROJECT NUMBER: ER BRF 0174(16)	
FILE NAME: sllc210brg.dgn	PLOT DATE: 15-AUG-2012
PROJECT LEADER: K. HIGGINS	DRAWN BY: J. SALVATORI
DESIGNED BY: W. LAMMER	CHECKED BY: W. LAMMER
BEARING DETAILS	SHEET 20 OF 44





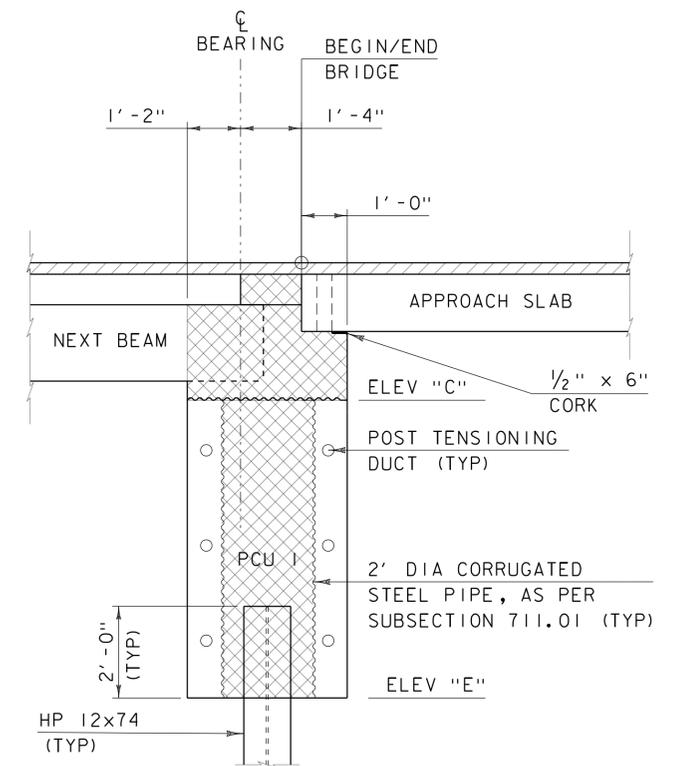
**PCU I PLAN**  
SCALE 1/2" = 1'-0"



**PCU I ELEVATION**  
SCALE 1/2" = 1'-0"

**PCU I ELEVATIONS**

	AB1	AB2
ELEV "A"	1044.00	1042.00
ELEV "B"	1043.00	1041.13
ELEV "C"	1040.93	1039.05
ELEV "D"	1040.57	1038.69
ELEV "E"	1034.43	1032.55



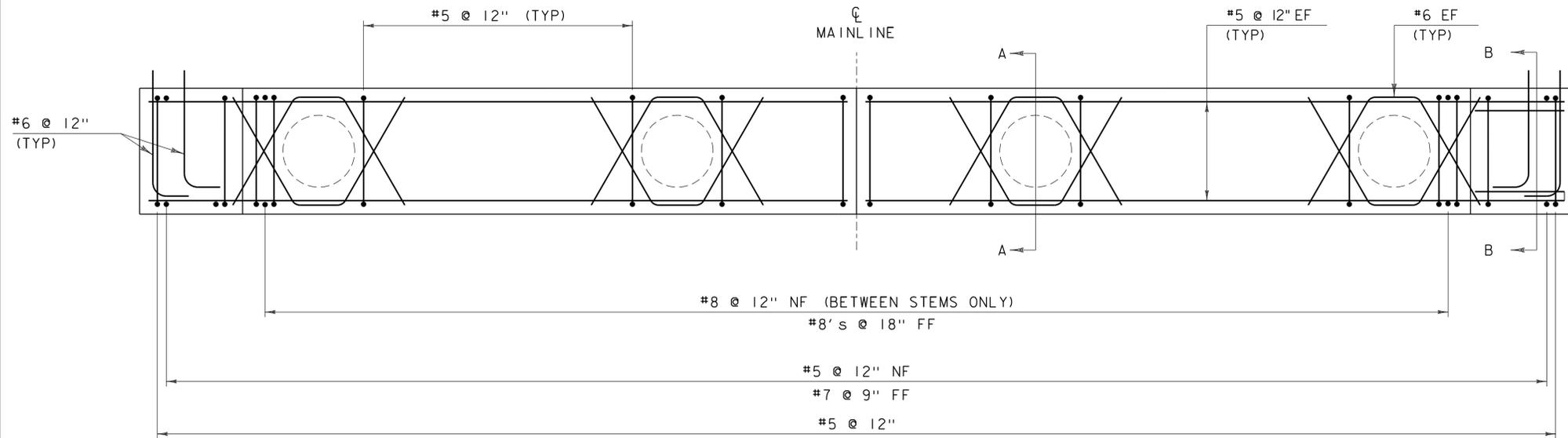
**PCU I TYPICAL**  
SCALE 1/2" = 1'-0"

NOTE: POST-TENSIONING AND ASSOCIATED ITEMS ONLY REQUIRED IF PILE CAP IS CONSTRUCTED OF MORE THAN ONE UNIT.

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

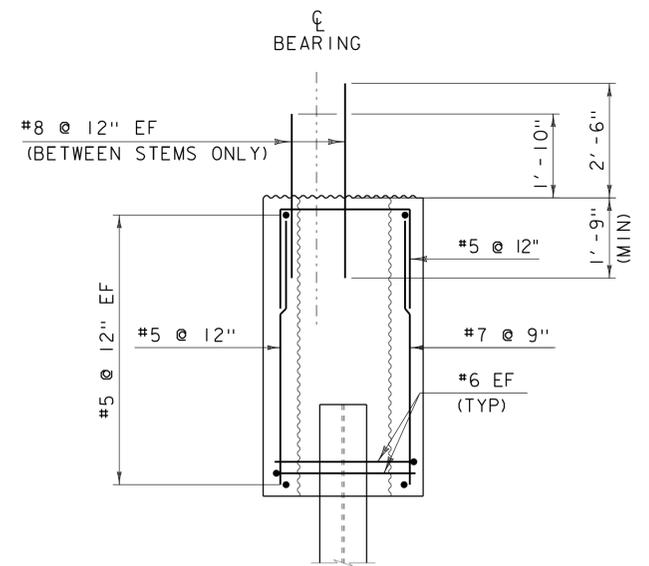
FILE NAME: slc210sub.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: W. LAMMER  
ABUTMENT PLAN

PLOT DATE: 08-AUG-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 22 OF 44



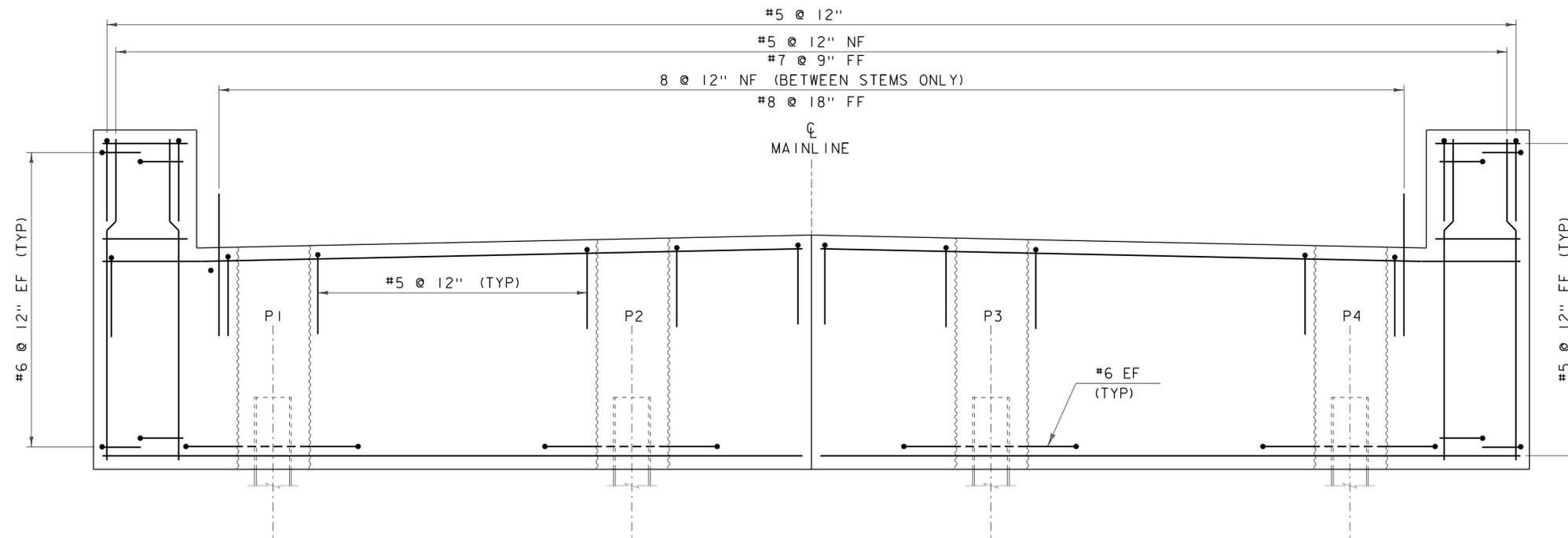
PCU I REINFORCING PLAN

SCALE 1/2" = 1'-0



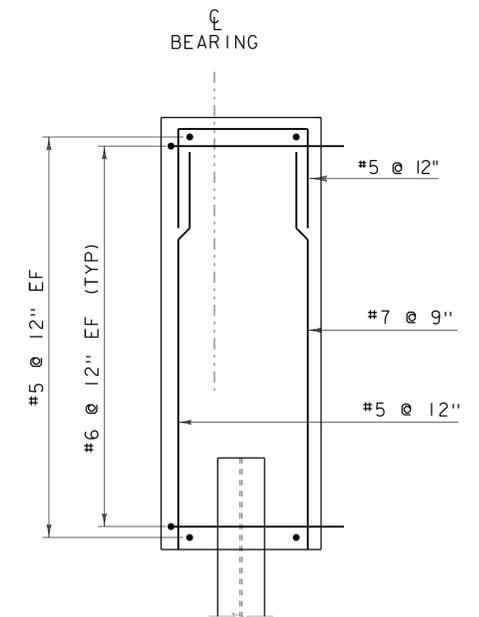
SECTION A-A

SCALE 1/2" = 1'-0



PCU I REINFORCING ELEVATION

SCALE 1/2" = 1'-0



SECTION B-B

SCALE 1/2" = 1'-0

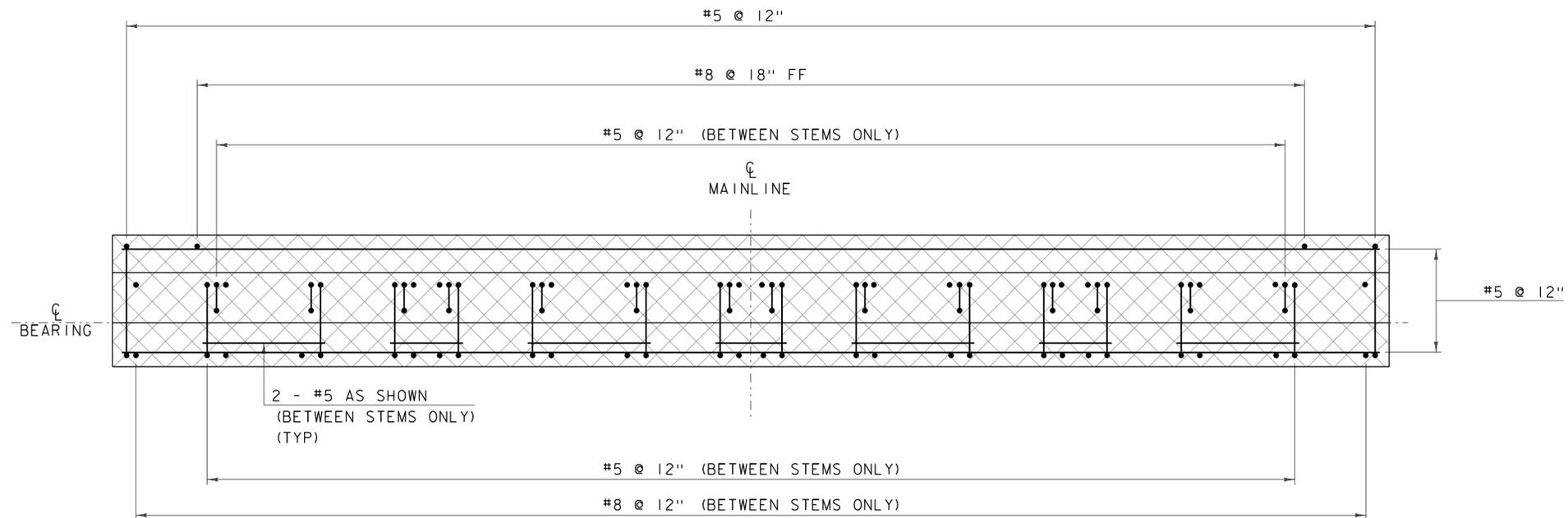
NOTE:

- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- ▲ = CUT TO FIT IN FIELD
- 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

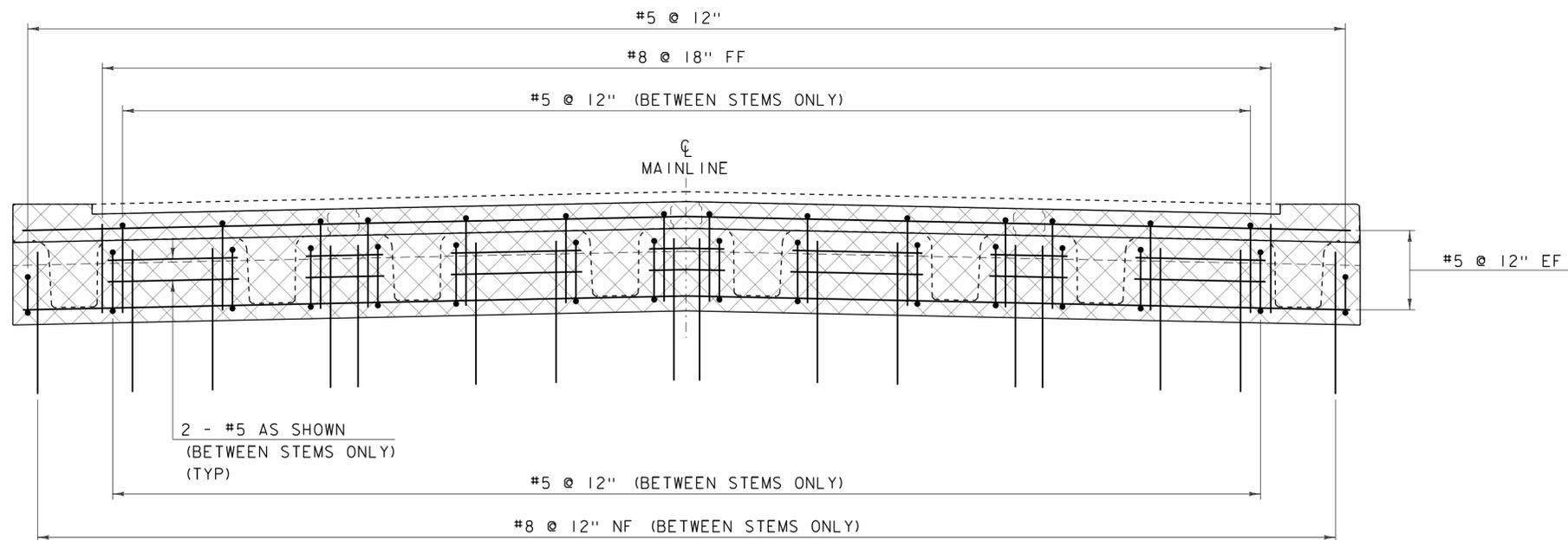
PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sl1c210sub.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: W. LAMMER  
ABUTMENT REINFORCING

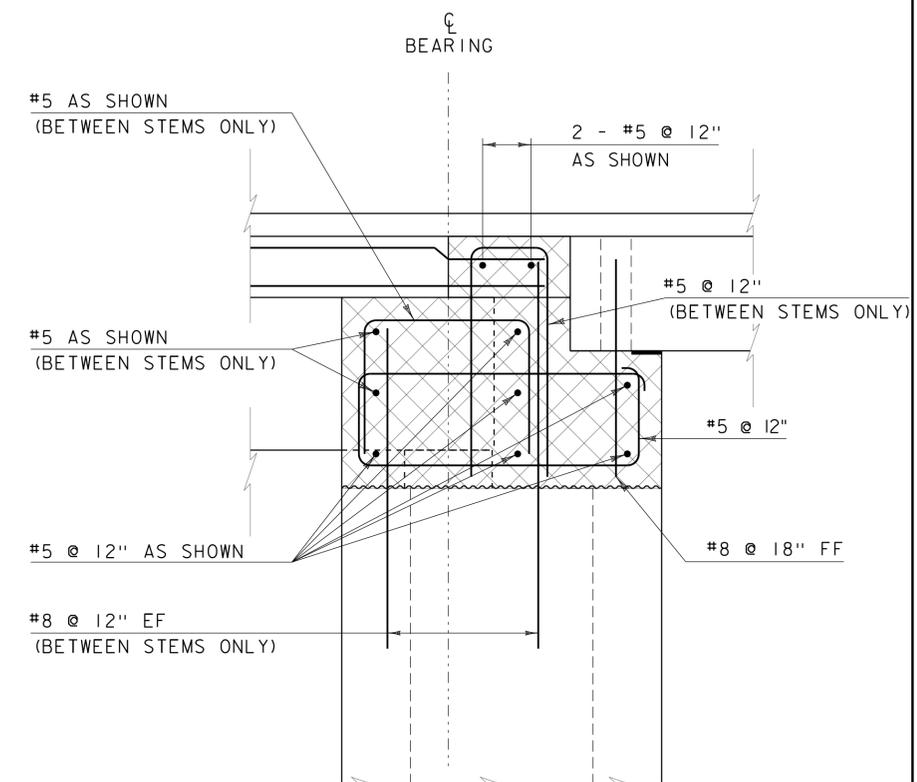
PLOT DATE: 08-AUG-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 23 OF 44



**DECK CLOSURE POUR  
REINFORCING PLAN**  
SCALE 1/2" = 1'-0"



**DECK CLOSURE POUR  
REINFORCING ELEVATION**  
SCALE 1/2" = 1'-0"



**REINFORCING TYPICAL**  
SCALE 1" = 1'-0"

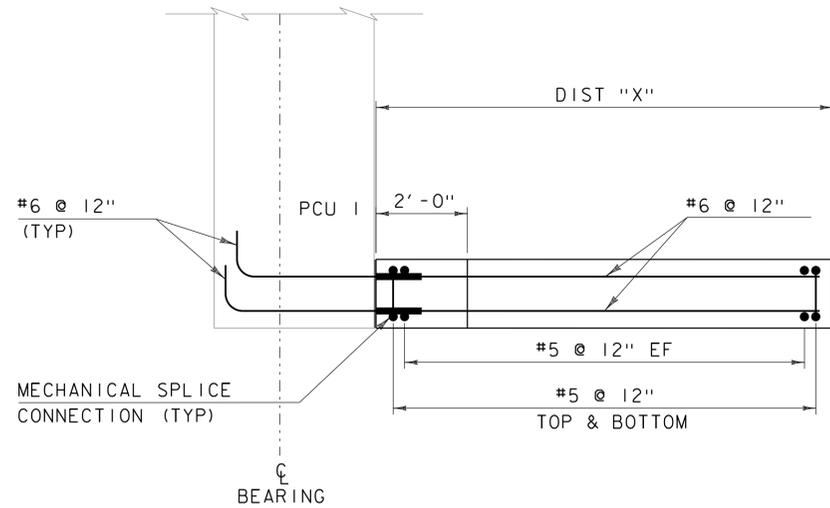
**NOTE:**

- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- ▲ = CUT TO FIT IN FIELD
- 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 2' - 2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: slc210sub.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: W. LAMMER  
DECK CLOSURE POUR DETAILS

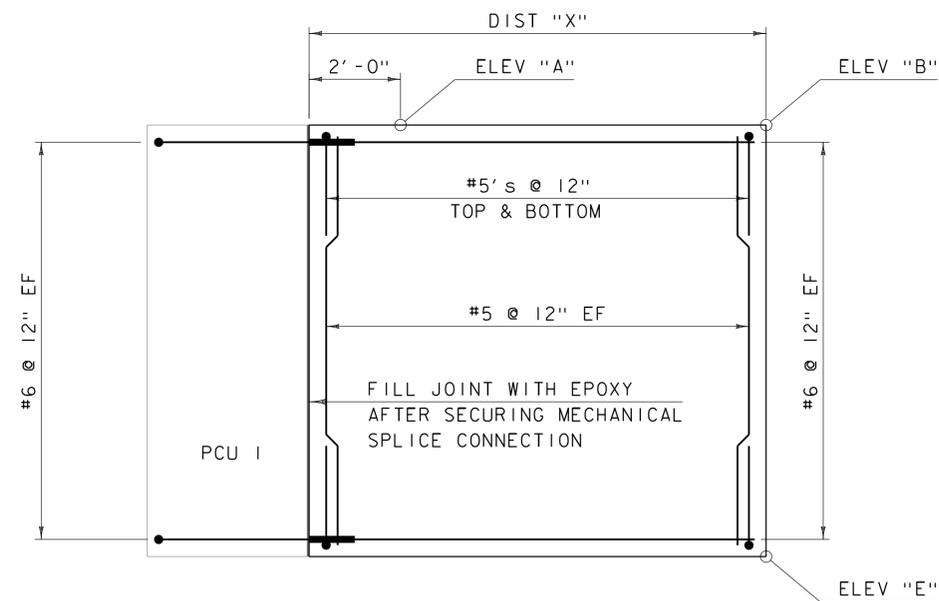
PLOT DATE: 08-AUG-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 24 OF 44



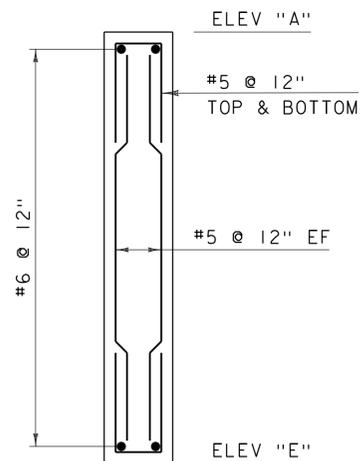
**PCU 2 PLAN**  
SCALE 1" = 1'-0"

**PCU 2 ELEVATIONS**

	WW1	WW2	WW3	WW4
ELEV "A"	1044.00	1044.00	1042.00	1042.00
ELEV "B"	1044.00	1044.00	1041.50	1041.50
ELEV "E"	1034.43	1034.43	1032.55	1032.55
DIST "X"	10'-0"	10'-0"	10'-0"	10'-0"



**PCU 2 ELEVATION**  
SCALE 1/2" = 1'-0"



**PCU 2 TYPICAL**  
SCALE 1/2" = 1'-0"

**NOTE:**

- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- ▲ = CUT TO FIT IN FIELD
- 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

**NOTES:**

1. EPOXY SHALL BE INCIDENTAL TO THE PRECAST CONCRETE STRUCTURE.

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sl1c210sub.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: W. LAMMER  
WINGWALL DETAILS

PLOT DATE: 08-AUG-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 25 OF 44





4 INCH WHITE LINE  
 STA 266+00 - 268+35 LT  
 STA 268+75 - 270+25 LT  
 STA 266+00 - 270+25 RT

4 INCH YELLOW LINE (DOUBLE CENTERLINE)  
 STA 266+00 - 268+35 LT/RT  
 STA 268+75 - 270+25 LT/RT

CLEANING CULV. PIPE, IN-PLACE (0 TO 24 IN., INCL.)  
 STA 266+08.65 - 266+68.65 LT

REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS III  
 STA 266+08.65 LT  
 SQUARE TUBE SIGN POST AND ANCHOR  
 STA 267+15.00 RT  
 STA 268+17.00 LT

REMOVAL AND DISPOSAL OF GUARDRAIL  
 STA. 266+67.20 TO 267+26.56 RT  
 STA. 266+90.66 TO 267+26.56 LT  
 STA. 268+07.69 TO 268+39.86 LT  
 STA. 268+07.69 TO 268+92.80 RT

CONSTRUCT 5'-0" APRON  
 STA 266+05.96 - 266+65.84 LT  
 STA 268.14.34 - 268+90.14 LT  
 STA 269+62.49 - 270+14.50 LT

TRAFFIC SIGNS, TYPE A  
 STA 267+15.00 RT  
 STA 268+17.00 LT

REMOVING LARGE TREES  
 STA 268+25 LT  
 STA 268+35 LT  
 STA 268+40 LT  
 STA 268+69 LT

**ENGLEHARDT JR., WALTER A.**

**PERERA, THOMAS B. & GRETCHEN**

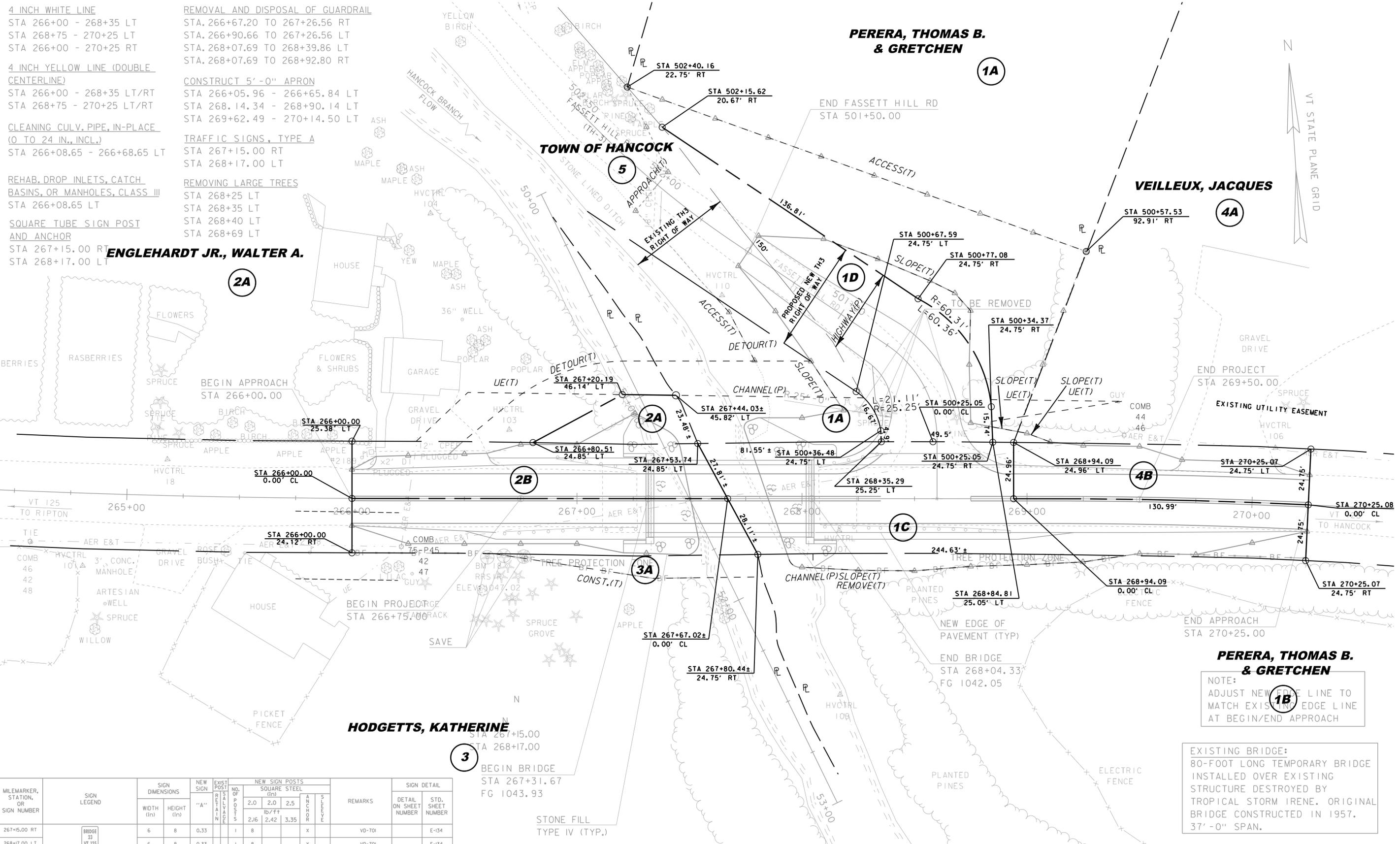
**VEILLEUX, JACQUES**

**HODGETTS, KATHERINE**

**PERERA, THOMAS B. & GRETCHEN**

NOTE:  
 ADJUST NEW EDGE LINE TO MATCH EXISTING EDGE LINE AT BEGIN/END APPROACH

EXISTING BRIDGE:  
 80-FOOT LONG TEMPORARY BRIDGE INSTALLED OVER EXISTING STRUCTURE DESTROYED BY TROPICAL STORM IRENE. ORIGINAL BRIDGE CONSTRUCTED IN 1957. 37'-0" SPAN.



MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS		NEW SIGN "A"	EXIST. POST NO. OF POSTS	NEW SIGN POSTS SQUARE STEEL (in)				REMARKS	SIGN DETAIL	
		WIDTH (in)	HEIGHT (in)			2.0	2.0	2.5	A		S	DETAIL ON SHEET NUMBER
267+15.00 RT	BRIDGE 23	6	8	0.33	1	8	2.0	2.5	X	VD-701	E-134	
268+17.00 LT	VT 125	6	8	0.33	1	8	2.16	2.42	X	VD-701	E-134	
TOTALS				SF 0.66		FT 16			EA			

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."

SIGN LEGEND  
 N = NEW  
 SHS = STANDARD HIGHWAY SIGNS (MUTCD)

LAYOUT SHEET

SCALE 1" = 20'-0"  
 20 0 20

FOR R.O.W. USE ONLY

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

PROJECT NAME: HANCOCK  
 PROJECT NUMBER: ER BRF 0174(I6)  
 FILE NAME: r11c210.layout.dgn  
 PROJECT LEADER: K. HIGGINS  
 DESIGNED BY: J. SALVATORI  
 ROW LAYOUT SHEET 1 OF 1  
 PLOT DATE: 08-AUG-2012  
 DRAWN BY: J. BLANCHARD  
 CHECKED BY: H. PETROVS  
 SHEET 28 OF 44

## EPSC PLAN NARRATIVE

### 1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF BRIDGE 23 AND RELATED APPROACH AND CHANNEL WORK.

THE BRIDGE IS LOCATED ALONG VT 125 APPROXIMATELY 2.2 MILES WEST OF THE JUNCTION WITH VT 100.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.94 ACRES.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST ONE CONSTRUCTION SEASON.

### 1.2 SITE INVENTORY

#### 1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE PROJECT AREA IS MOSTLY FORESTED AND STEEP. THE EXISTING BRIDGE WAS HEAVILY DAMAGED BY TROPICAL STORM IRENE IN FALL 2011. AN EXISTING TEMPORARY BRIDGE WAS INSTALLED ON THE EXISTING ALIGNMENT, EXTENDING BEYOND THE OLD ABUTMENTS. THE GRADE OF VT 125 WAS RAISED APPROXIMATELY 6 FEET, PRIMARILY EAST OF THE BRIDGE. THE ALIGNMENT OF TH 3 WAS TEMPORARILY CHANGED AS IT HAD BEEN DAMAGED AS WELL.

#### 1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE HANCOCK BRANCH IS THE ONLY WATERBODY WITHIN THE PROJECT SITE. THE RIVER IS CLASSIFIED AS SINUOUS, PROBABLY INCISED. THE STREAM BED CONSISTS OF SAND, GRAVEL AND COBBLES. THERE IS AN EXISTING DROP INLET AT STATION 266+08 LT THAT IS CURRENTLY PLUGGED. THIS DI AND THE 12" CPEP WILL BE CLEANED AS PART OF THIS PROJECT.

#### 1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS MOSTLY OF FORESTED LAND COVER. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT OF THE EXISTING BRIDGE. THREE LARGE CONIFERS, LIKELY ALREADY DAMAGED BY THE POST-IRENE RELOCATION OF TH 3, WILL BE REMOVED TO ACCOMMODATE THE PROPOSED TEMPORARY BRIDGE AND UTILITY RELOCATION. UPON PROJECT COMPLETION, THE CHANNEL WILL BE ARMORED WITH STONE FILL TYPE IV AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

#### 1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF ADDISON, VERMONT.

SOILS ON THE PROJECT SITE ARE: StB - STETSON GRAVELLY FINE SANDY LOAM, 5% TO 12% SLOPES, "K FACTOR" = 0.10.

**NOTE:** K-VALUES GENERALLY INDICATE THE FOLLOWING:

0.0-0.23 = LOW EROSION POTENTIAL

0.24-0.36 = MODERATE EROSION POTENTIAL

0.37 AND HIGHER = HIGH EROSION POTENTIAL

#### 1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO

HISTORICAL OR ARCHEOLOGICAL AREAS: YES, SEE EPSC PLAN FOR LOCATION

PRIME AGRICULTURAL LAND: NO

THREATENED AND ENDANGERED SPECIES: NO

WATER RESOURCE: HANCOCK BRANCH

WETLANDS: YES, SEE EPSC PLAN FOR LOCATION

### 1.3 RISK EVALUATION

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

### 1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM

WATER CONTROLS, AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

#### 1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED. PROJECT DEMARCATION FENCING (PDF) AND BARRIER FENCE SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

CONTRACTOR TO INSTALL BARRIER FENCE AS PROPOSED ON THE EPSC PLAN.

#### 1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

#### 1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

#### 1.4.4 INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

FILTER CURTAINS WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

#### 1.4.5 DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

THE IMMEDIATE PROJECT AREA IS NOT LIKELY TO BE IMPACTED BY RUNOFF FROM UPSLOPE AREAS. THERFORE IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY. CONTRACTOR TO INSTALL DIVERSION MEASURES IF IT IS NECESSARY.

#### 1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSION POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

IT IS NOT ANTICIPATED THAT STONE CHECK DAMS WILL BE NECESSARY.

#### 1.4.7 CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS.

IT IS NOT ANTICIPATED THAT PERMANENT STORMWATER TREATMENT DEVICES WILL BE NECESSARY ON THIS PROJECT.

#### 1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

#### 1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

#### 1.4.10 STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

#### 1.4.11 DE-WATERING ACTIVITIES

DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

IT IS NOT ANTICIPATED THAT DEWATERING WILL BE NECESSARY.

#### 1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

### 1.5 SEQUENCE AND STAGING

*THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.*

#### 1.5.1 CONSTRUCTION SEQUENCE

#### 1.5.2 OFF-SITE ACTIVITIES

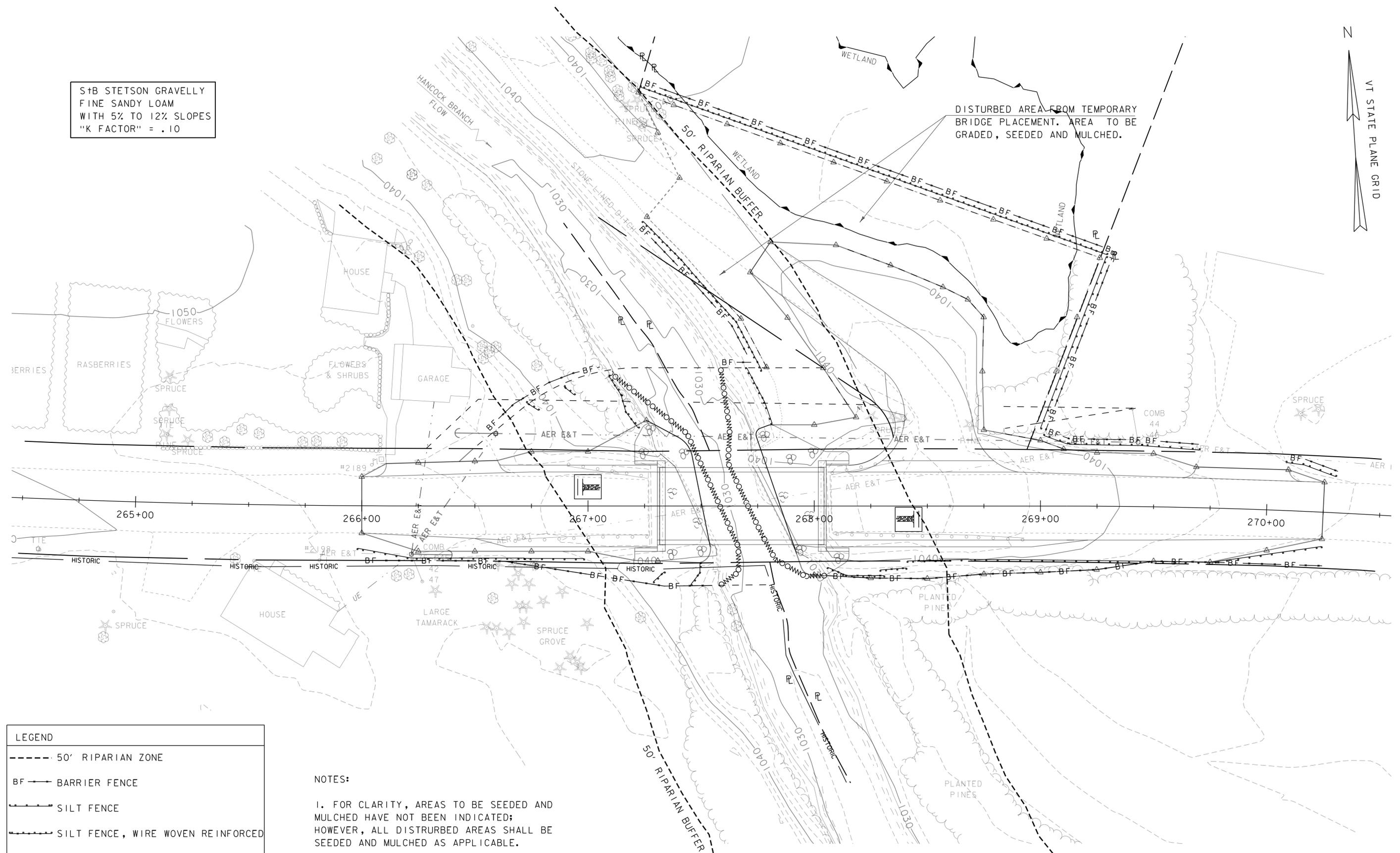
IN ADDITION TO THE CONTRACTOR CHECKLIST, ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: s11C210epsc\_nar.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: W. LAMMER  
EPSC NARRATIVE

PLOT DATE: 09-AUG-2012  
DRAWN BY: W. LAMMER  
CHECKED BY: J. SALVATORI  
SHEET 29 OF 44

S1B STETSON GRAVELLY  
FINE SANDY LOAM  
WITH 5% TO 12% SLOPES  
"K FACTOR" = .10



**LEGEND**

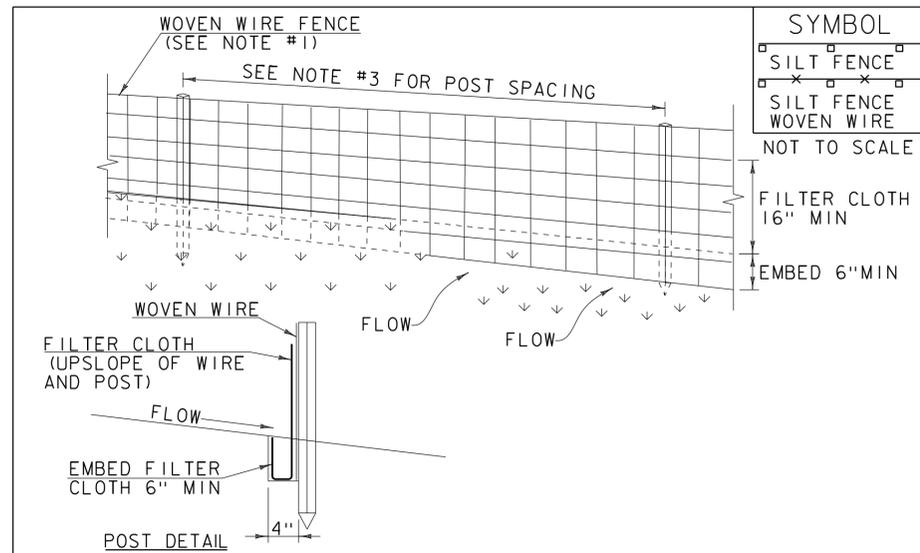
- 50' RIPARIAN ZONE
- BF → BARRIER FENCE
- ▲——— SILT FENCE
- ▲----- SILT FENCE, WIRE WOVEN REINFORCED
- ~~~~~ FILTER CURTAIN
- ▲ WETLAND BOUNDARY
- ▭ STABILIZED CONSTRUCTION ENTRANCE

**NOTES:**

- FOR CLARITY, AREAS TO BE SEEDED AND MULCHED HAVE NOT BEEN INDICATED; HOWEVER, ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS APPLICABLE.
- WETLANDS BOUNDARIES SHOWN ARE APPROXIMATE DUE TO THE AREA BEING HIGHLY DISTURBED BY TROPICAL STORM IRENE AND SUBSEQUENT WORK DONE THEREAFTER.

**EPSC PLAN**  
SCALE 1" = 20' - 0"  
20 0 20

PROJECT NAME: HANCOCK	
PROJECT NUMBER: ER BRF 0174(16)	
FILE NAME: sl1c210epsc_ex.dgn	PLOT DATE: 08-AUG-2012
PROJECT LEADER: K. HIGGINS	DRAWN BY: J. SALVATORI
DESIGNED BY: J. SALVATORI	CHECKED BY: W. LAMMER
EPSC PLAN	SHEET 30 OF 44



**CONSTRUCTION SPECIFICATIONS**

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAF1100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

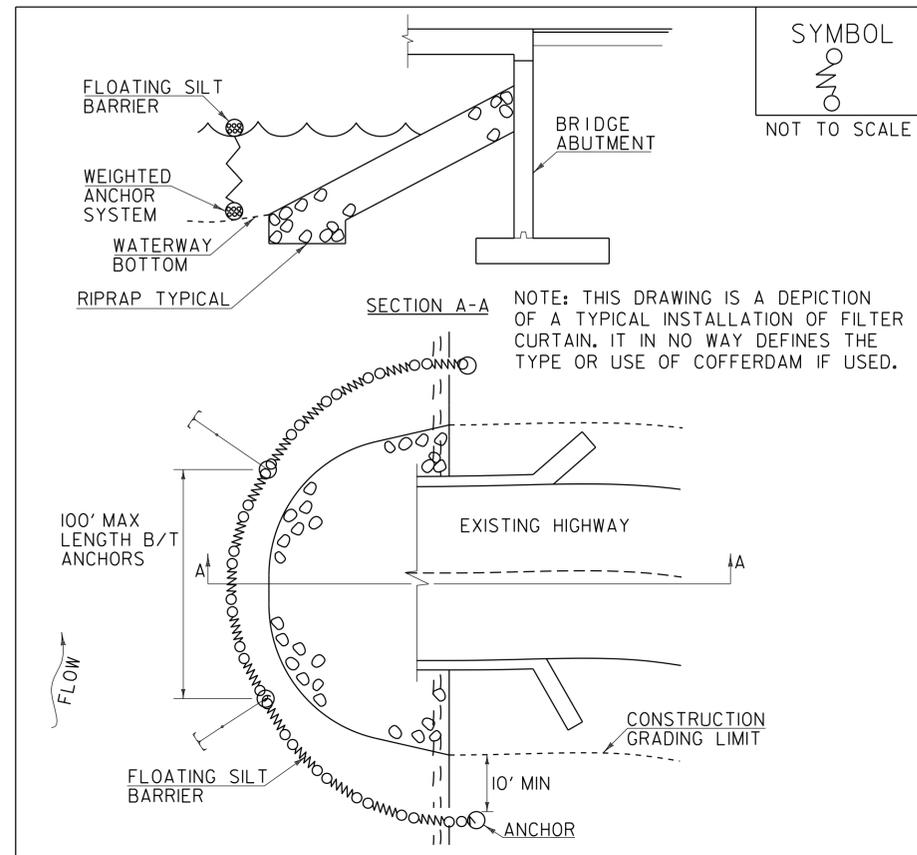
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**SILT FENCE**

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF



**CONSTRUCTION SPECIFICATIONS**

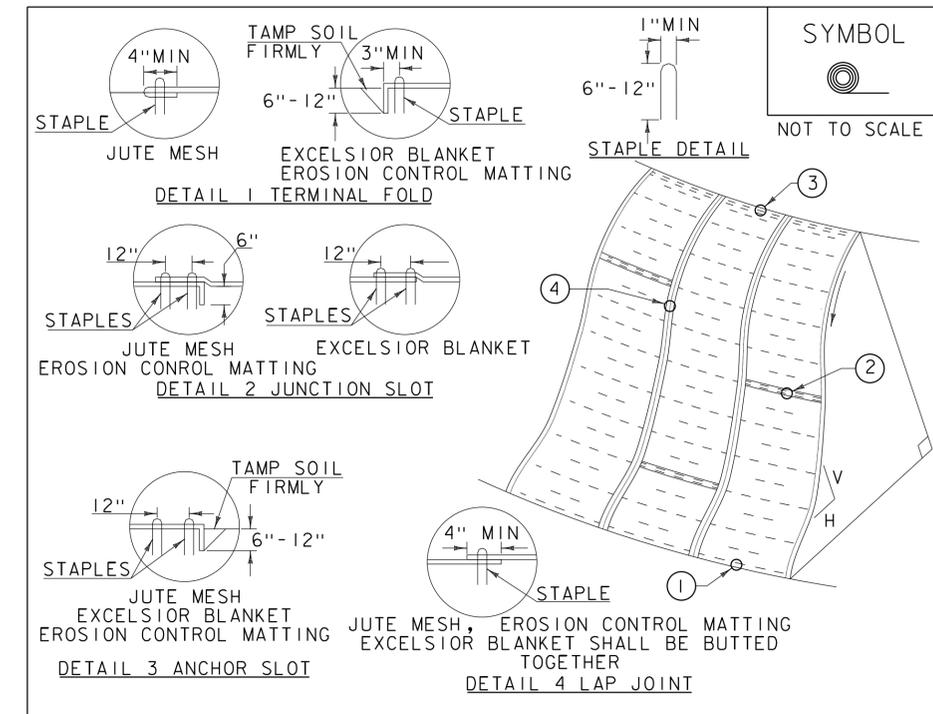
1. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
2. MAXIMUM 100' LENGTH BETWEEN ANCHORS.
3. LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
4. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
5. THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**FILTER CURTAIN**

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
SEPTEMBER 4, 2009	WHF



**CONSTRUCTION SPECIFICATIONS**

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE**

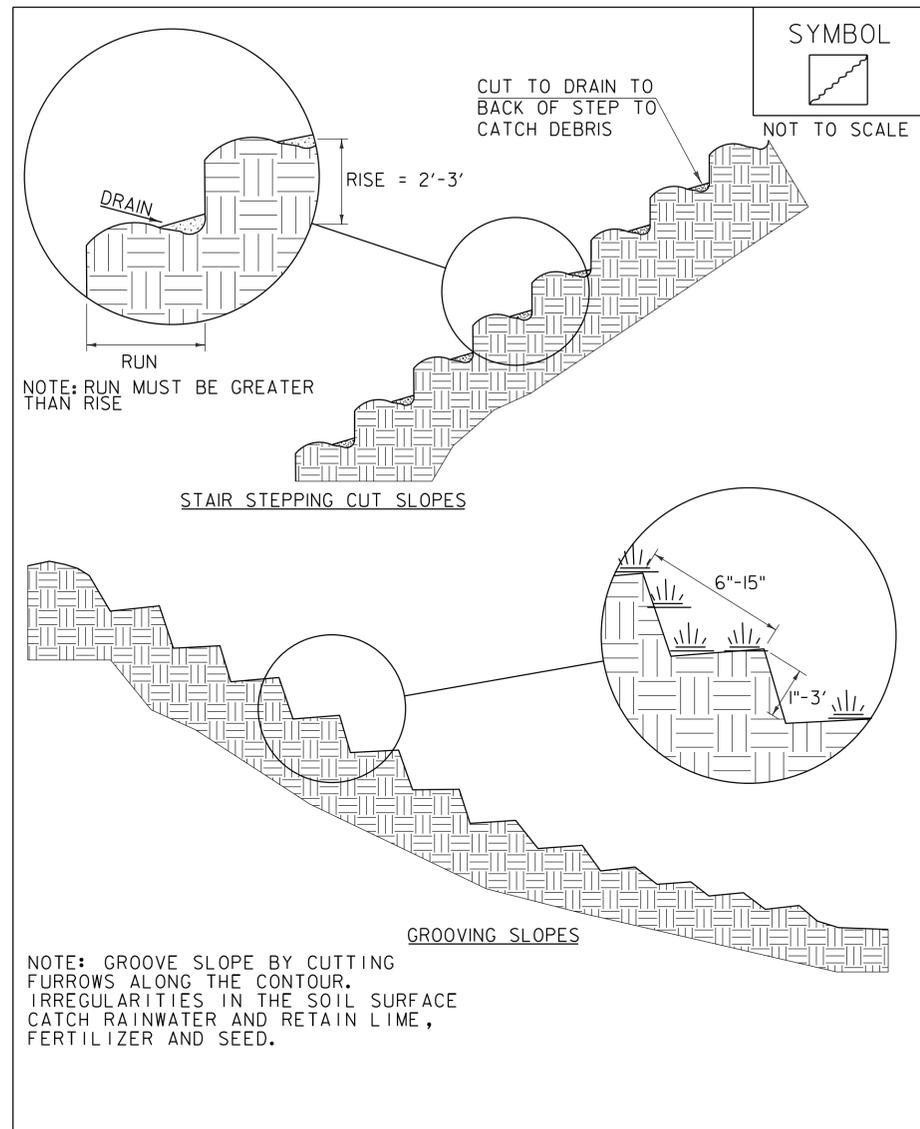
NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sllc210epsc\_details.dgn PLOT DATE: 08-AUG-2012  
PROJECT LEADER: K. HIGGINS DRAWN BY: J. SALVATORI  
DESIGNED BY: J. SALVATORI CHECKED BY: W. LAMMER  
EPSC DETAILS - I SHEET 31 OF 44



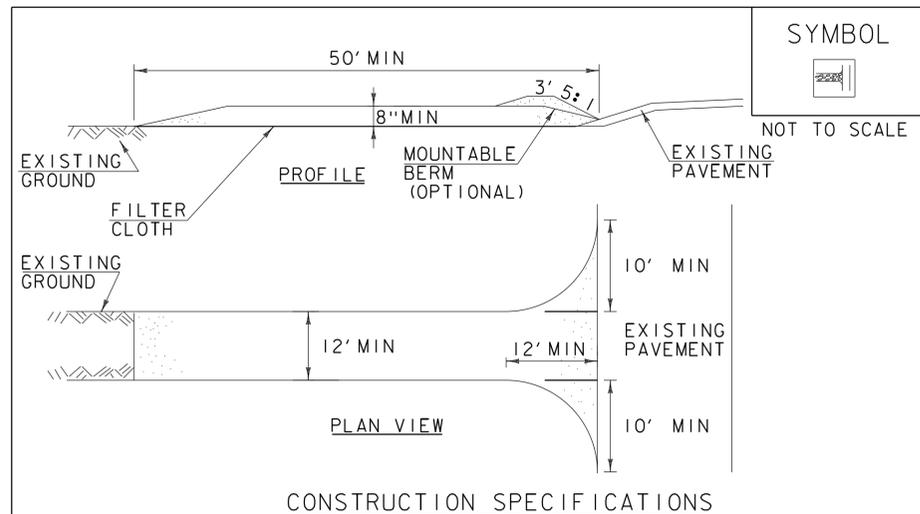
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**SURFACE ROUGHENING**

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR  
EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM  
THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL  
GUIDANCE.

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE  
CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF



1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**STABILIZED CONSTRUCTION ENTRANCE**

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR  
EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM  
THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL  
GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH  
SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35)  
OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

VAOT RURAL AREA MIX					
% WEIGHT	LBS/AC		NAME	GERM %	PURITY %
	BROADCAST	HYDROSEED			
37.5%	22.5	45	CREEPING RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX					
% WEIGHT	LBS/AC		NAME	GERM %	PURITY %
	BROADCAST	HYDROSEED			
42.5%	34	68	CREEPING RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE			
FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	FOLLOW	PELLETIZED	FOLLOW
500 LBS/AC	MANUFACTURER	2 TONS/AC	MANUFACTURER

**CONSTRUCTION GUIDANCE**

1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR  
ROADWAYS AND TRANSPORTATION FACILITIES

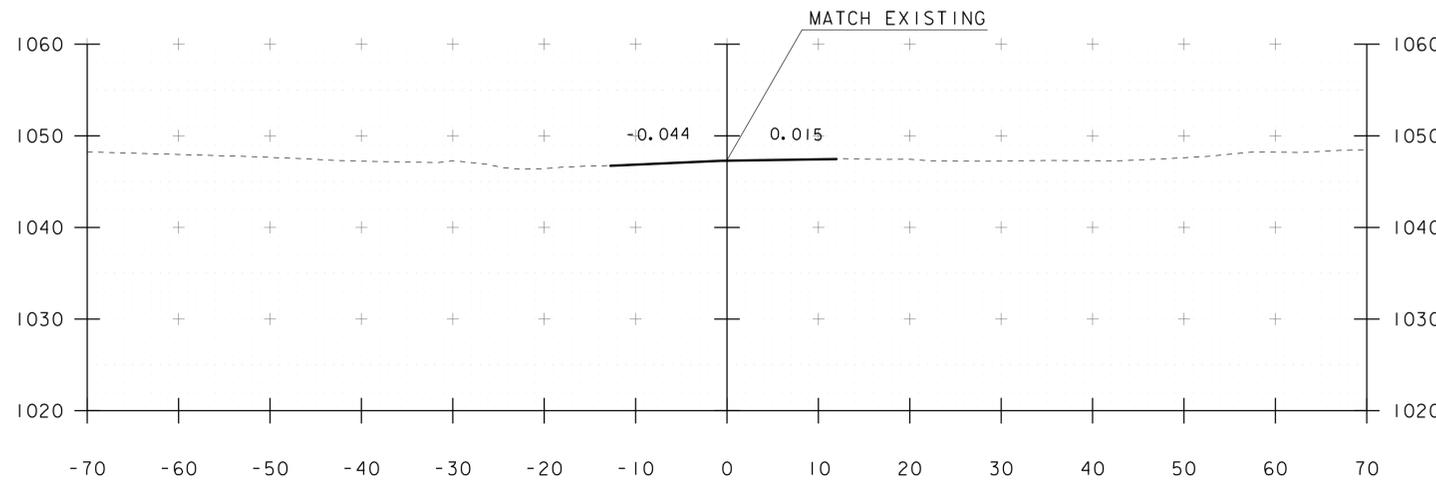
**TURF ESTABLISHMENT**

REVISIONS	
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF
FEBRUARY 16, 2011	WHF

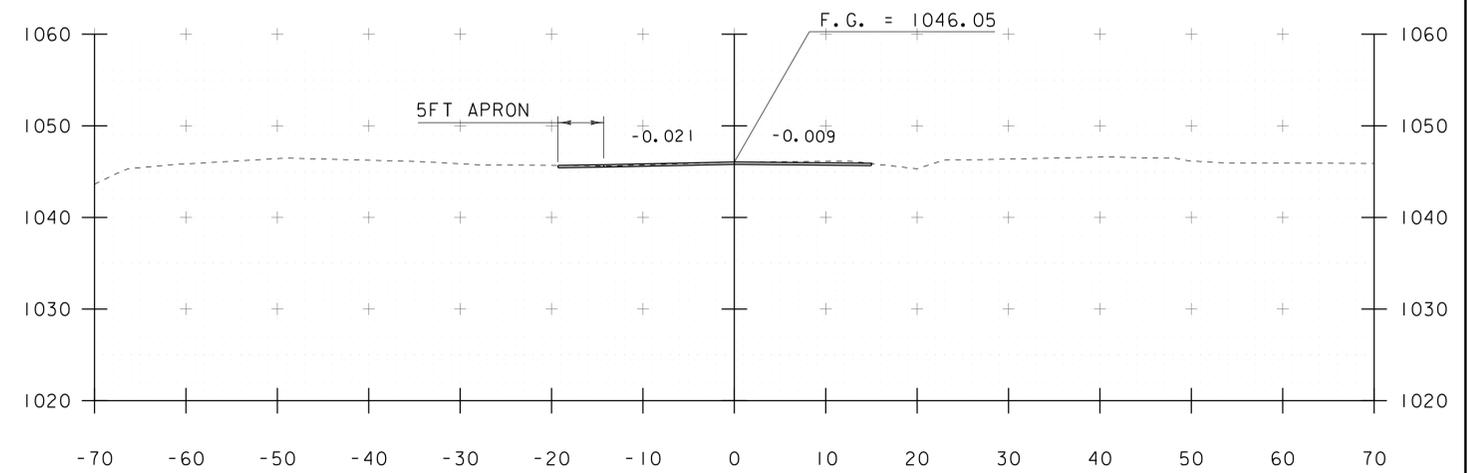
PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sl1c210epsc\_details.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: J. SALVATORI  
EPSC DETAILS - 2

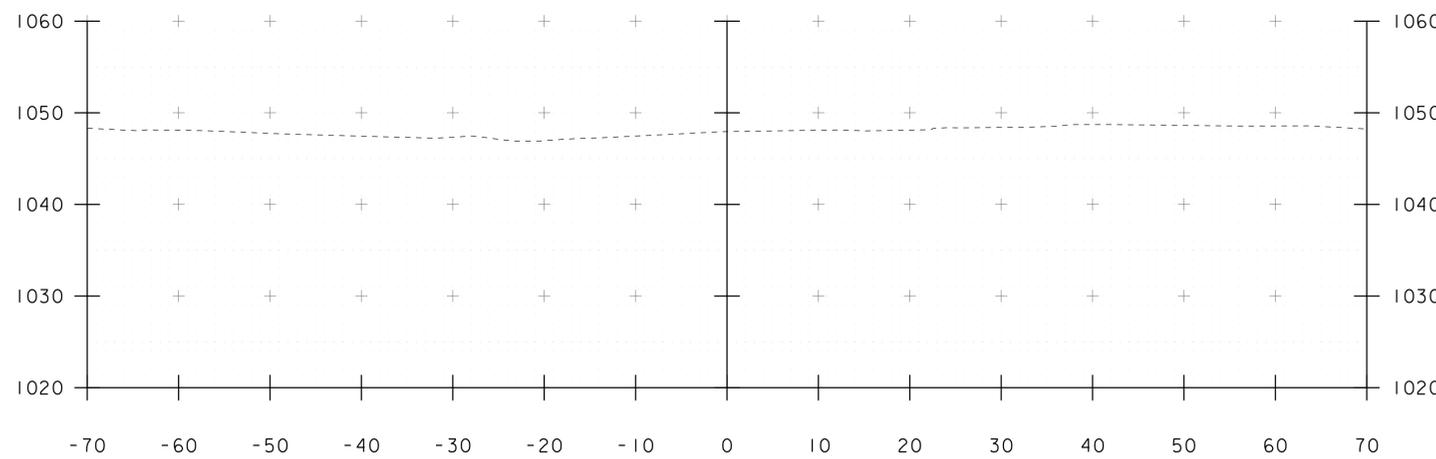
PLOT DATE: 08-AUG-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 32 OF 44



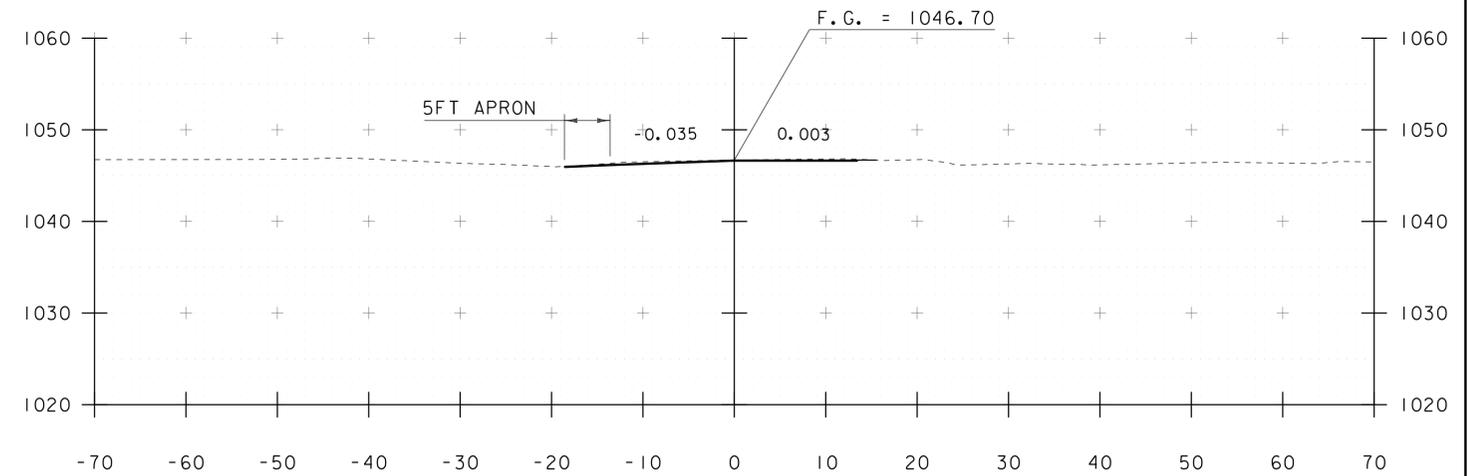
266+00  
BEGIN APPROACH



266+50



265+75



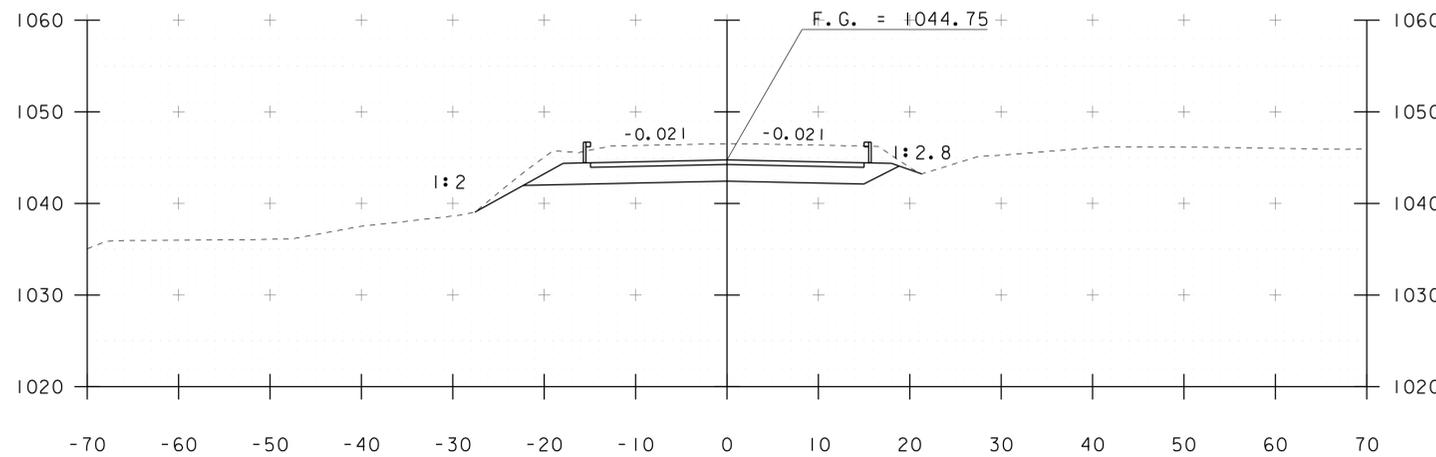
266+25

STA. 265+75 TO STA. 266+50

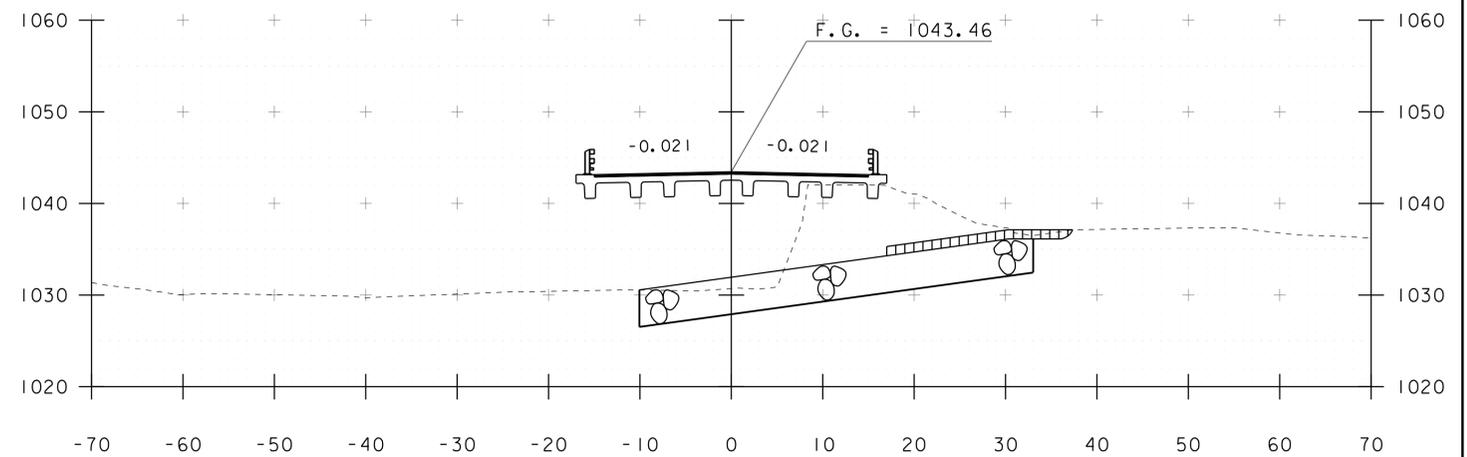
PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sl1c210xsl.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: J. SALVATORI  
MAINLINE SECTIONS SHEET 1

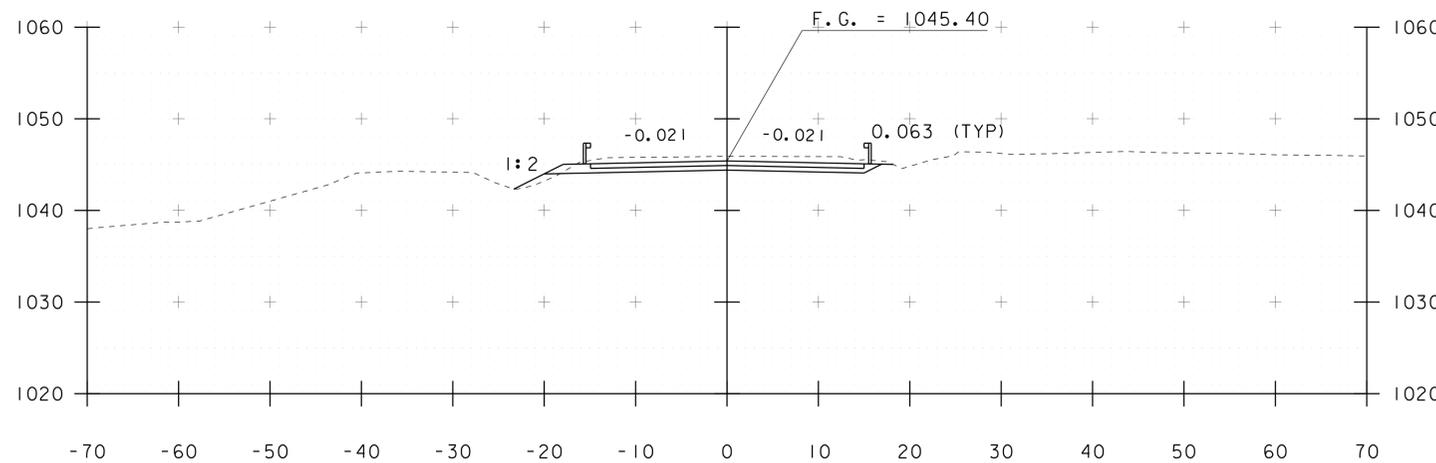
PLOT DATE: 08-AUG-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 33 OF 44



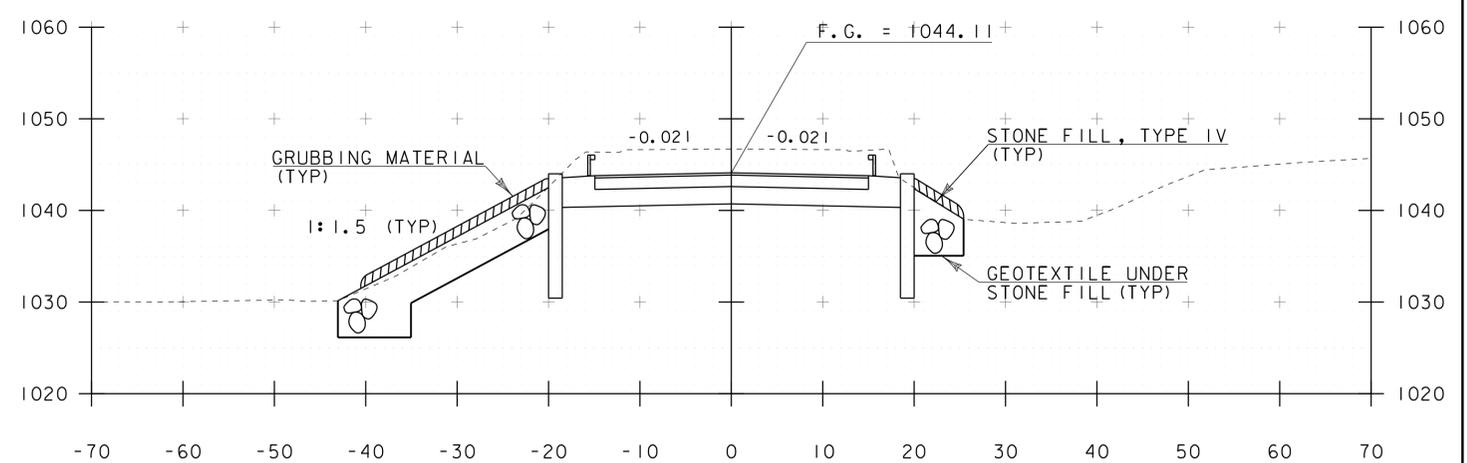
267+00



267+50  
BEGIN BRIDGE 267+31.67



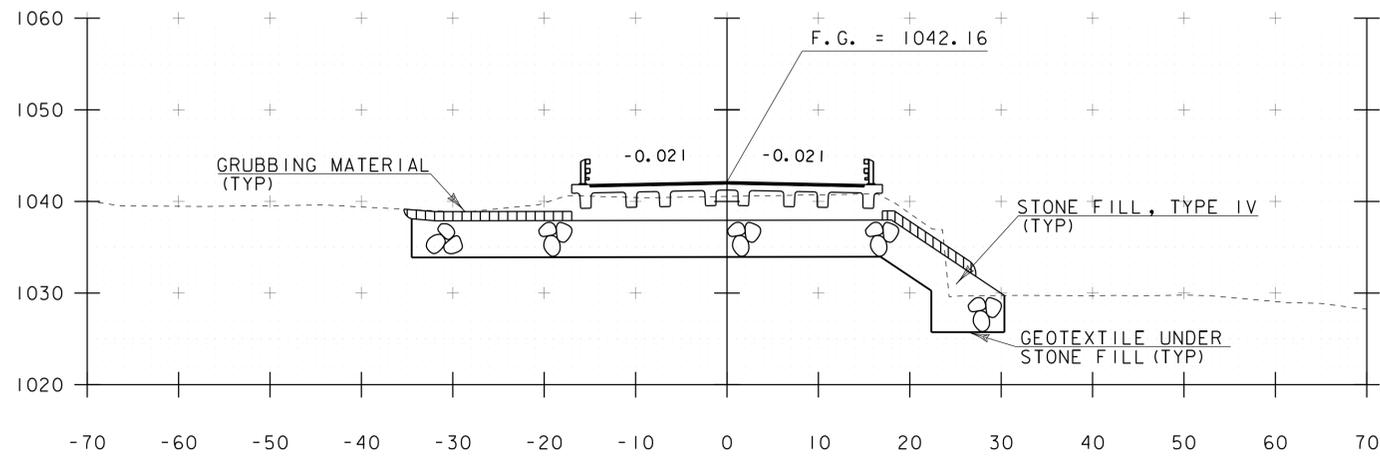
266+75  
BEGIN PROJECT



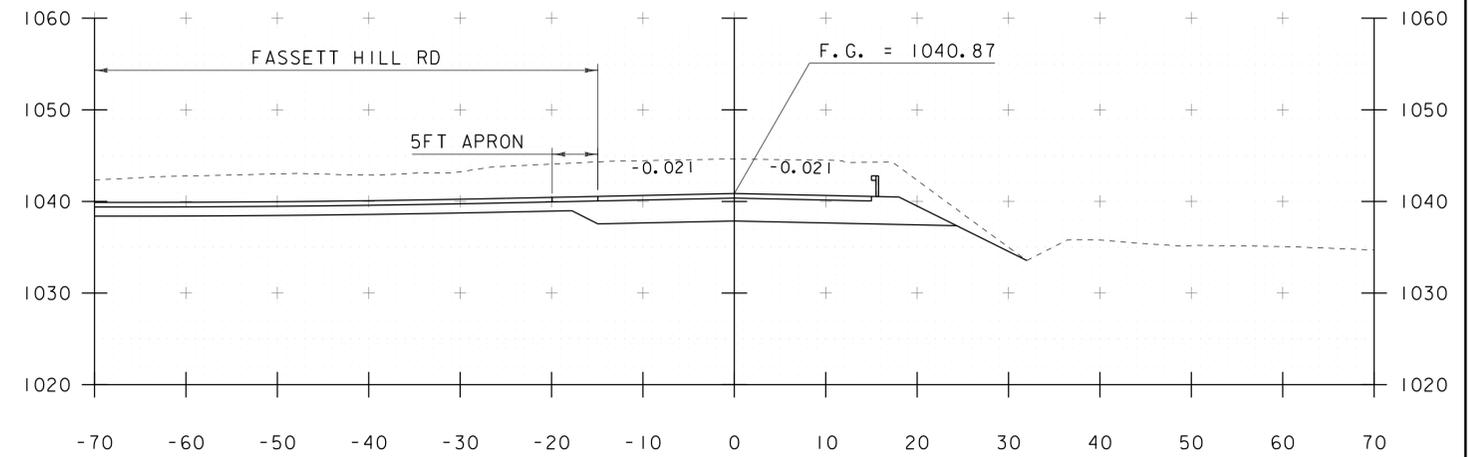
267+25

STA. 266+75 TO STA. 267+50

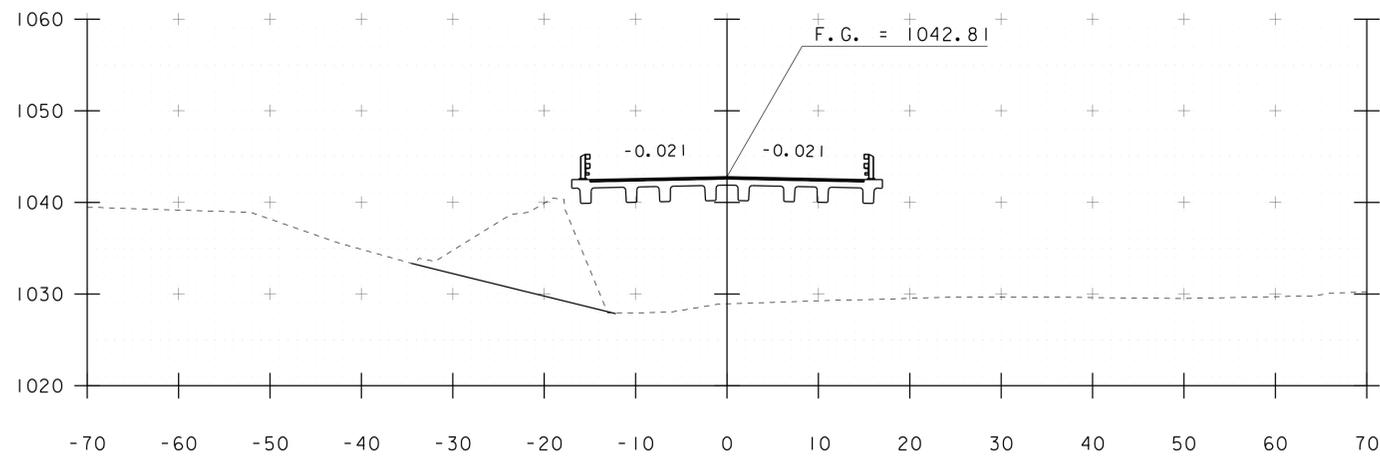
PROJECT NAME:	HANCOCK	PLOT DATE:	08-AUG-2012
PROJECT NUMBER:	ER BRF 0174(16)	DRAWN BY:	J. SALVATORI
FILE NAME:	sl1c210xsl.dgn	CHECKED BY:	W. LAMMER
PROJECT LEADER:	K. HIGGINS	SHEET	34 OF 44
DESIGNED BY:	J. SALVATORI		
MAINLINE SECTIONS SEET 2			



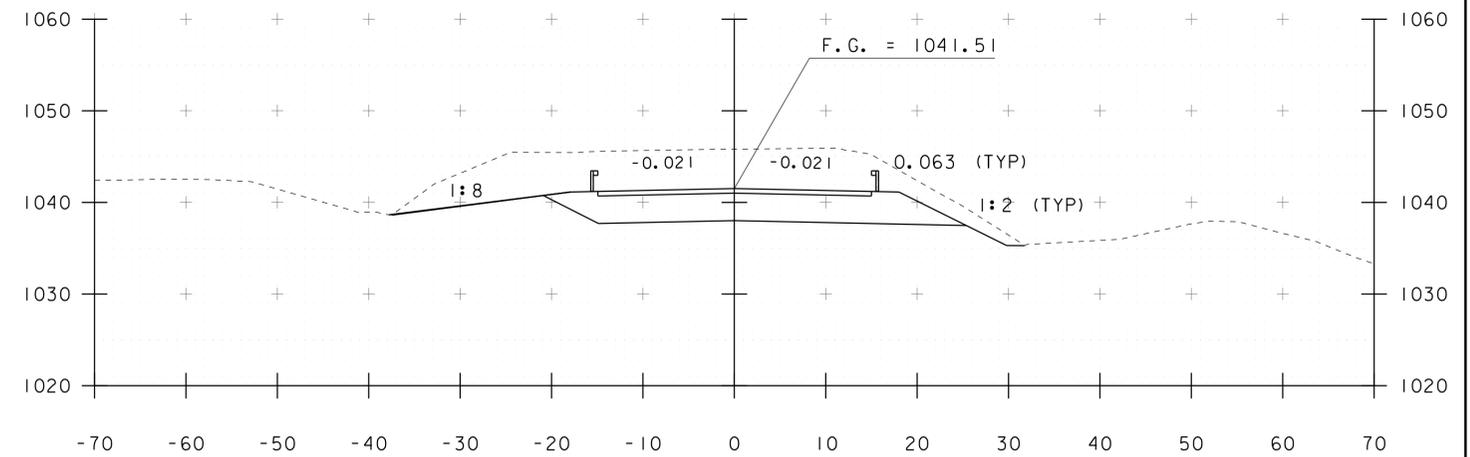
268+00  
END BRIDGE 268+04.33



268+50



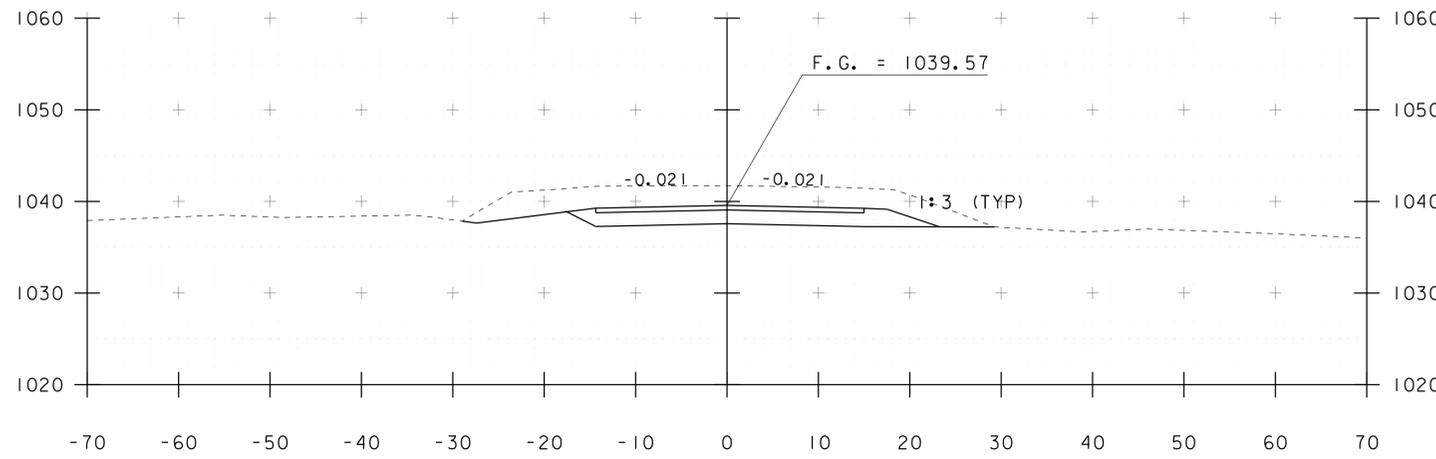
267+75



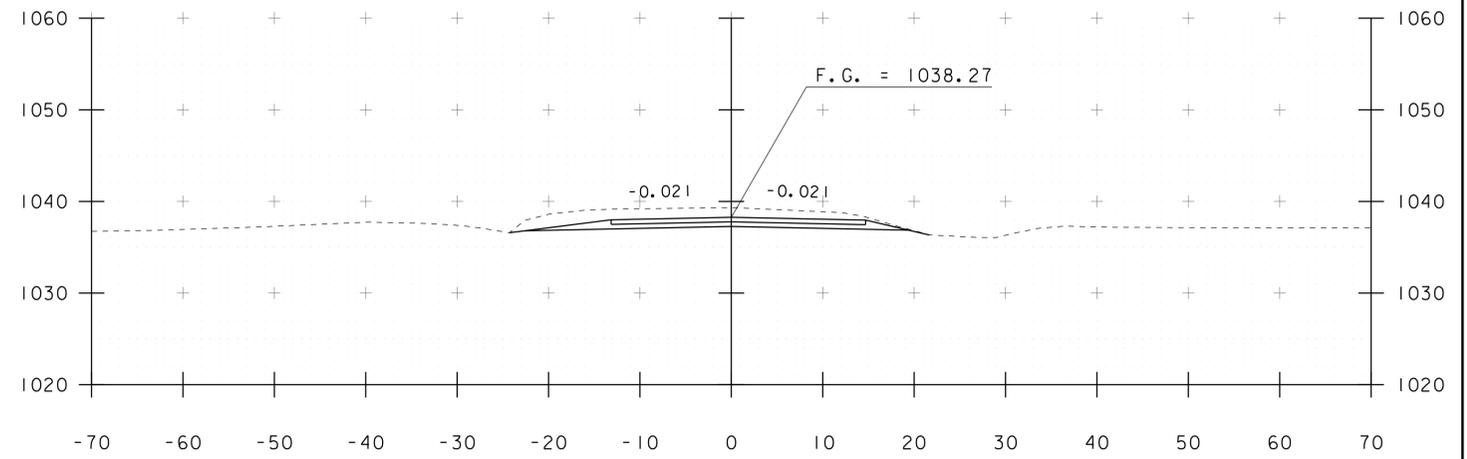
268+25

STA. 267+75 TO STA. 268+50

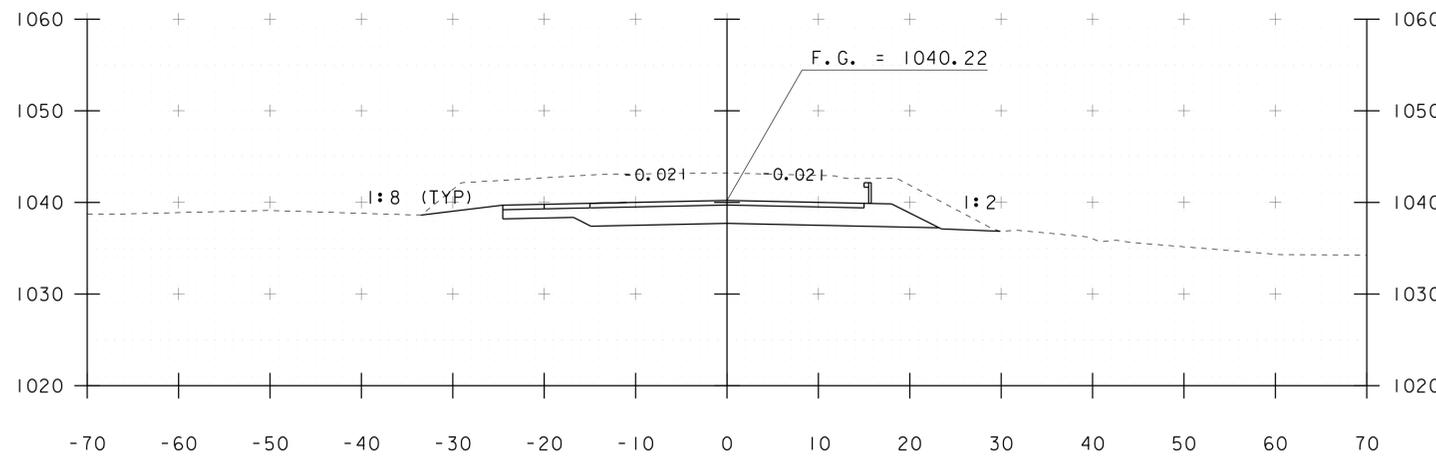
PROJECT NAME:	HANCOCK	PLOT DATE:	08-AUG-2012
PROJECT NUMBER:	ER BRF 0174(16)	DRAWN BY:	J. SALVATORI
FILE NAME:	sl1c210xsl.dgn	CHECKED BY:	W. LAMMER
PROJECT LEADER:	K. HIGGINS	SHEET	35 OF 44
DESIGNED BY:	J. SALVATORI		
MAINLINE SECTIONS SHEET	3		



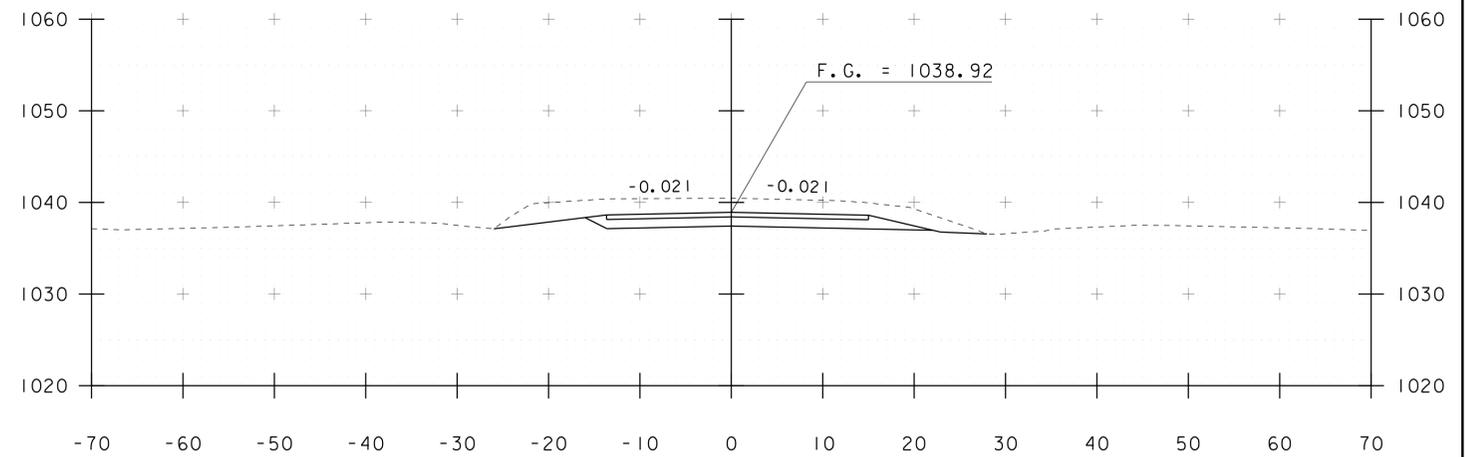
269+00



269+50  
END PROJECT



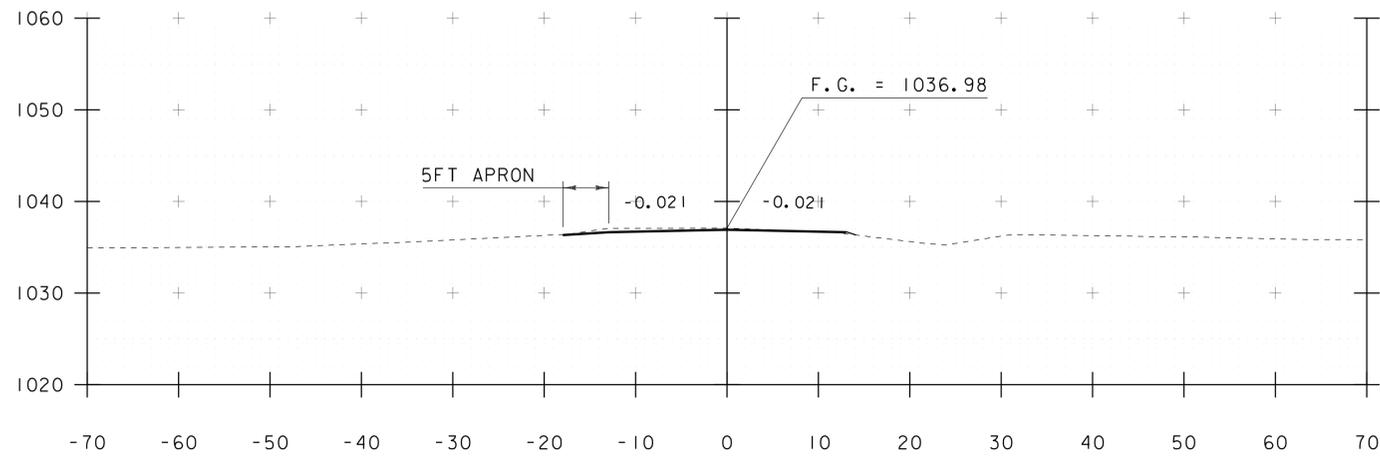
268+75



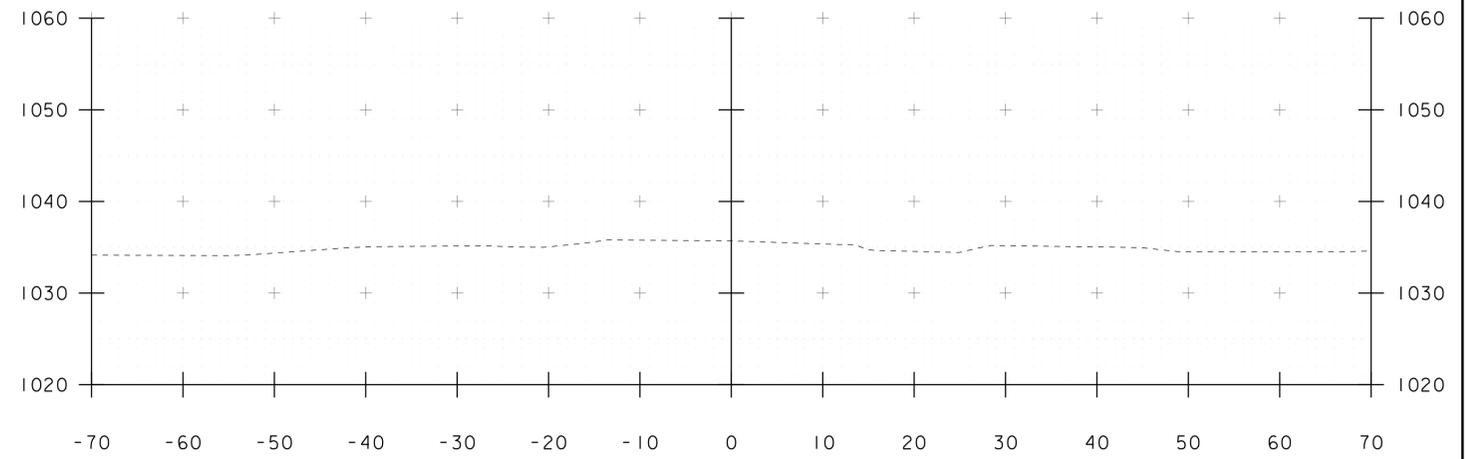
269+25

STA. 268+75 TO STA. 269+50

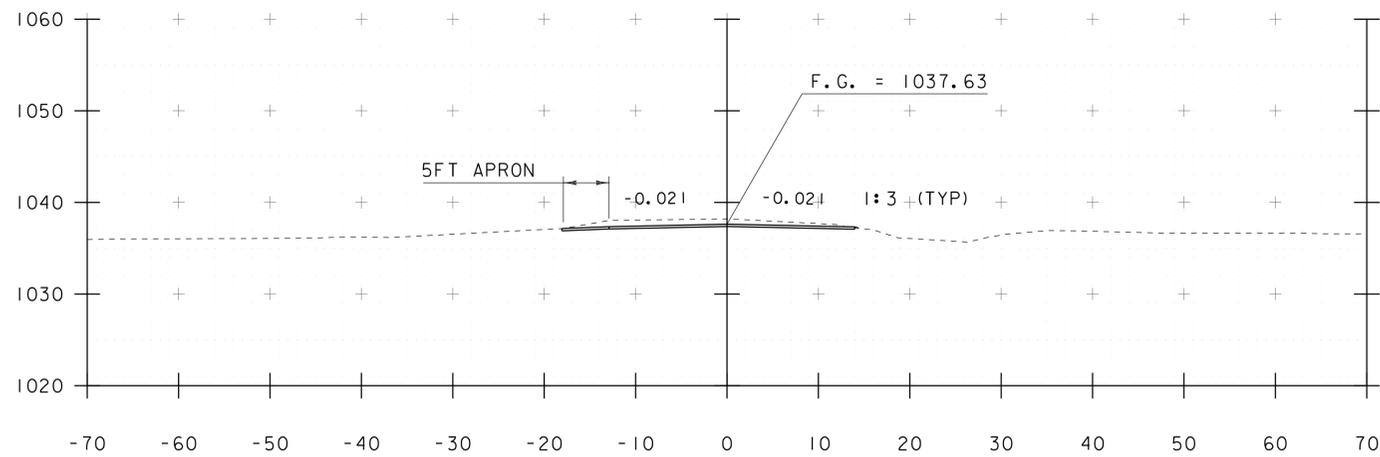
PROJECT NAME:	HANCOCK	PLOT DATE:	08-AUG-2012
PROJECT NUMBER:	ER BRF 0174(16)	DRAWN BY:	J. SALVATORI
FILE NAME:	sl1c210xsl.dgn	CHECKED BY:	W. LAMMER
PROJECT LEADER:	K. HIGGINS	SHEET	36 OF 44
DESIGNED BY:	J. SALVATORI		
MAINLINE SECTIONS SHEET	4		



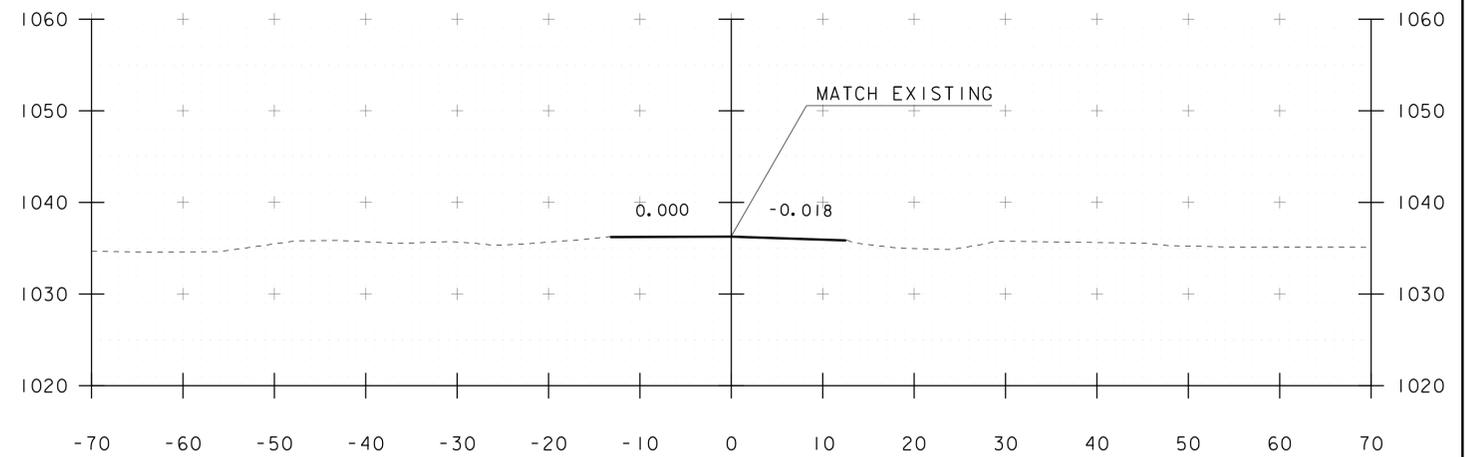
270+00



270+50



269+75



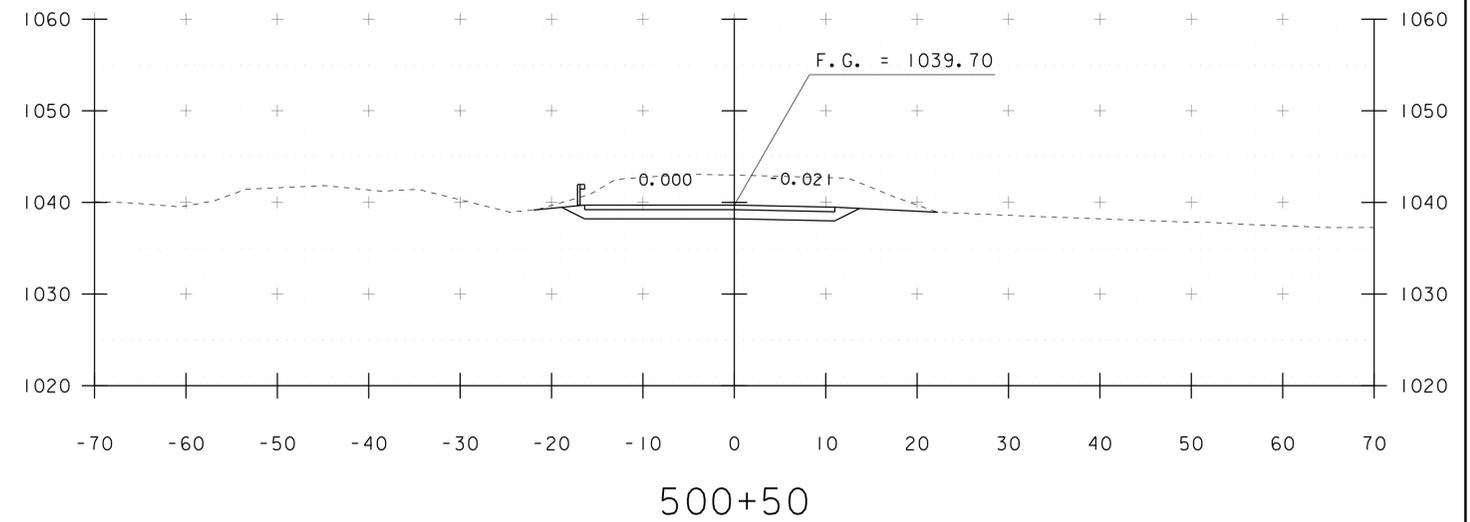
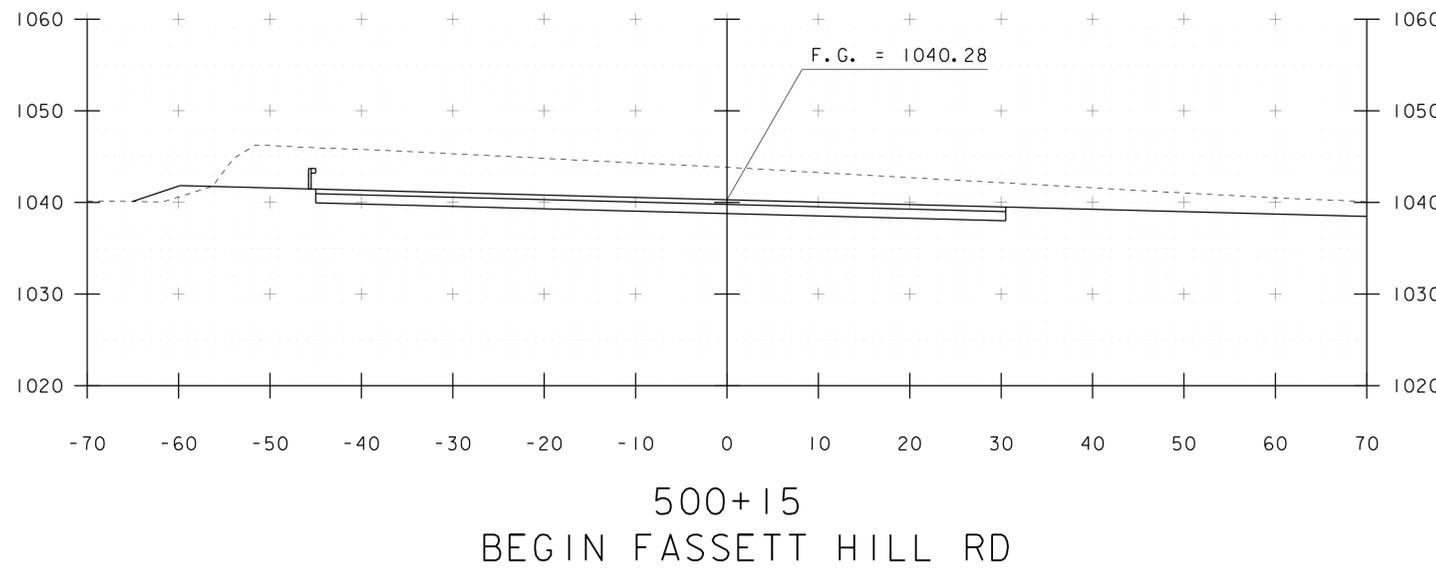
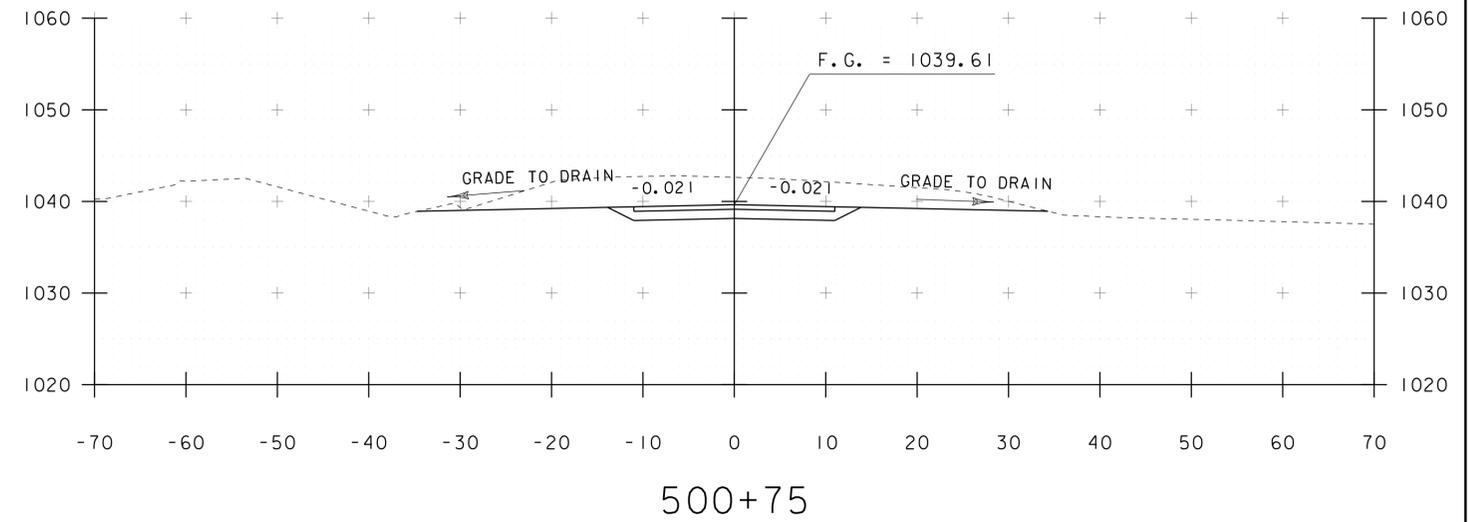
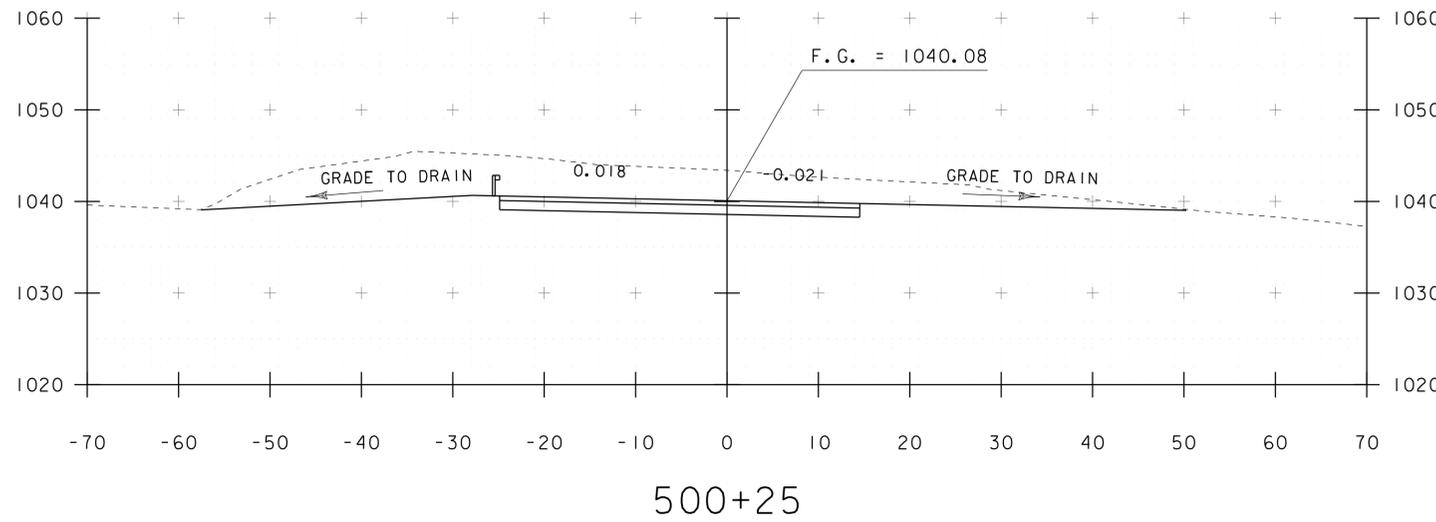
270+25  
END APPROACH

STA. 269+75 TO STA. 270+50

PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sllc210xsl.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: J. SALVATORI  
MAINLINE SECTIONS SHEET 5

PLOT DATE: 08-AUG-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 37 OF 44

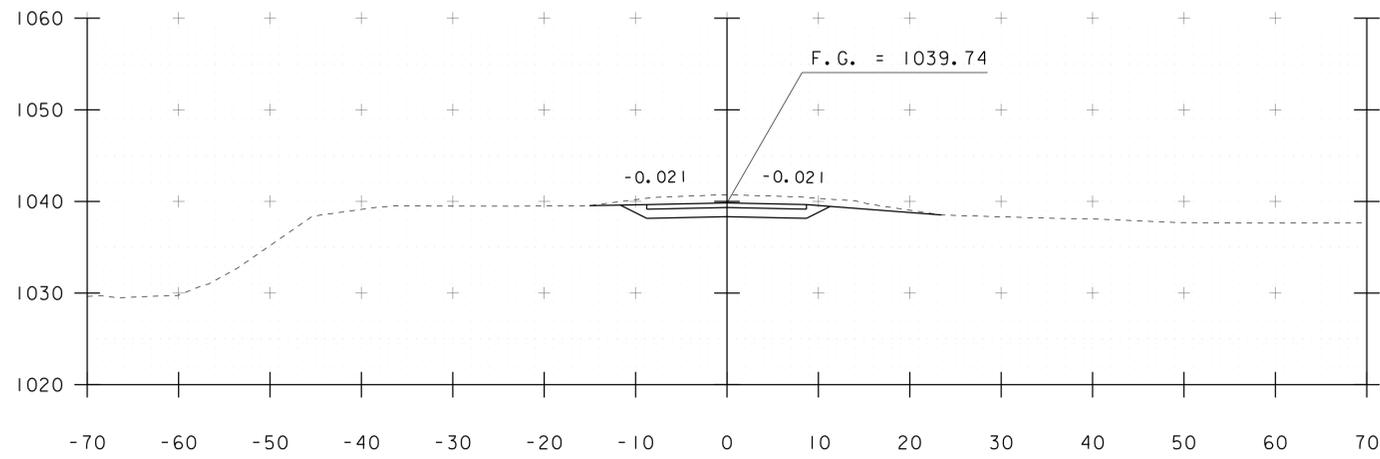


STA. 500+15 TO STA. 500+75

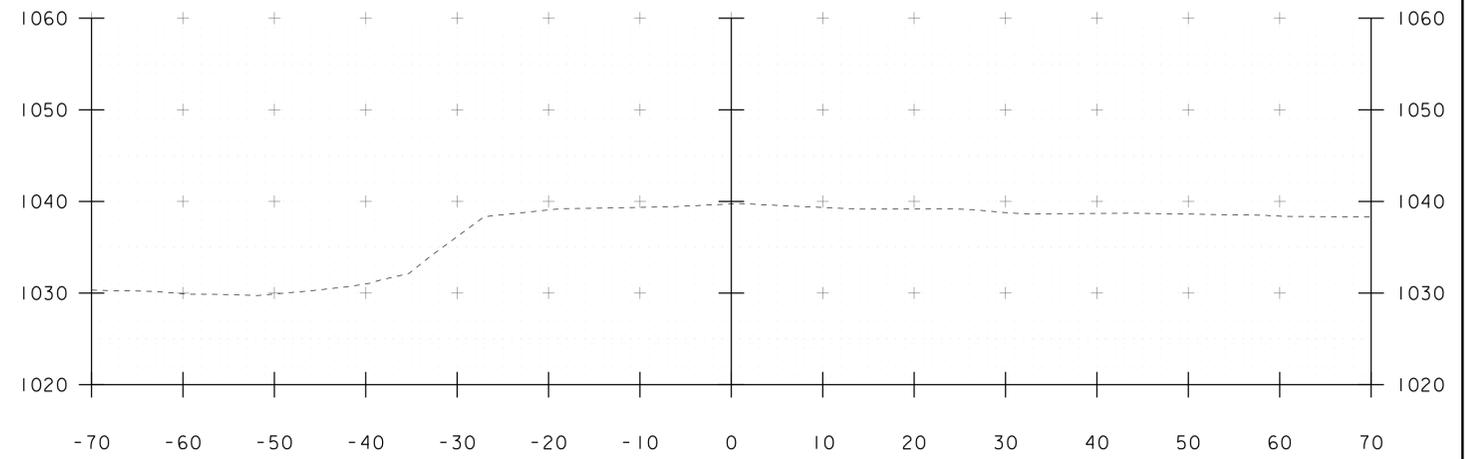
PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sllc210xsl.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: J. SALVATORI  
FASSETT HILL RD SECTIONS SHEET 1

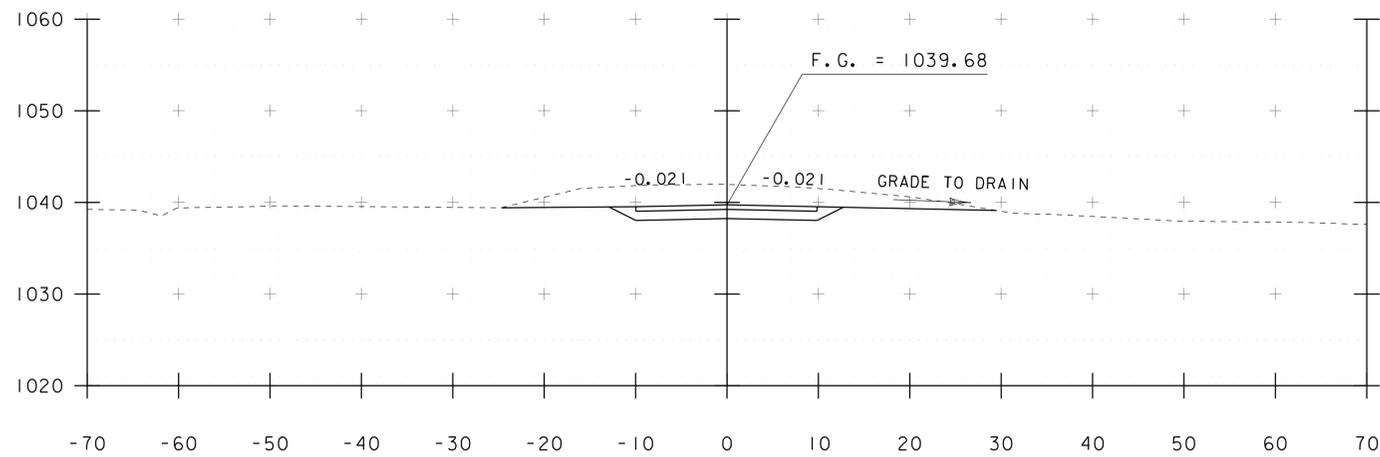
PLOT DATE: 08-AUG-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 38 OF 44



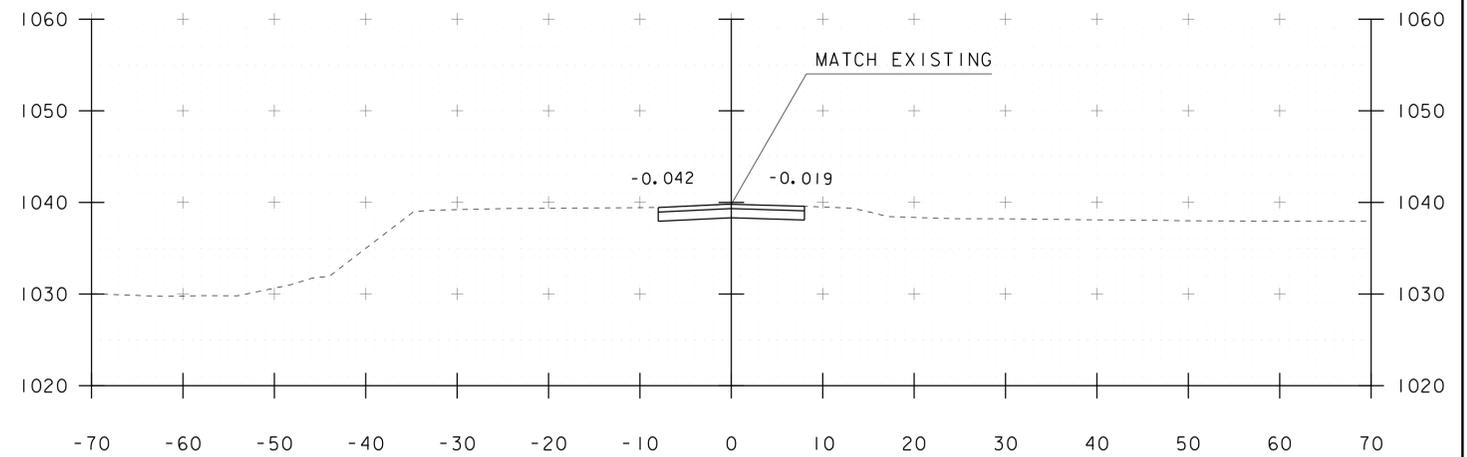
501+25



501+75



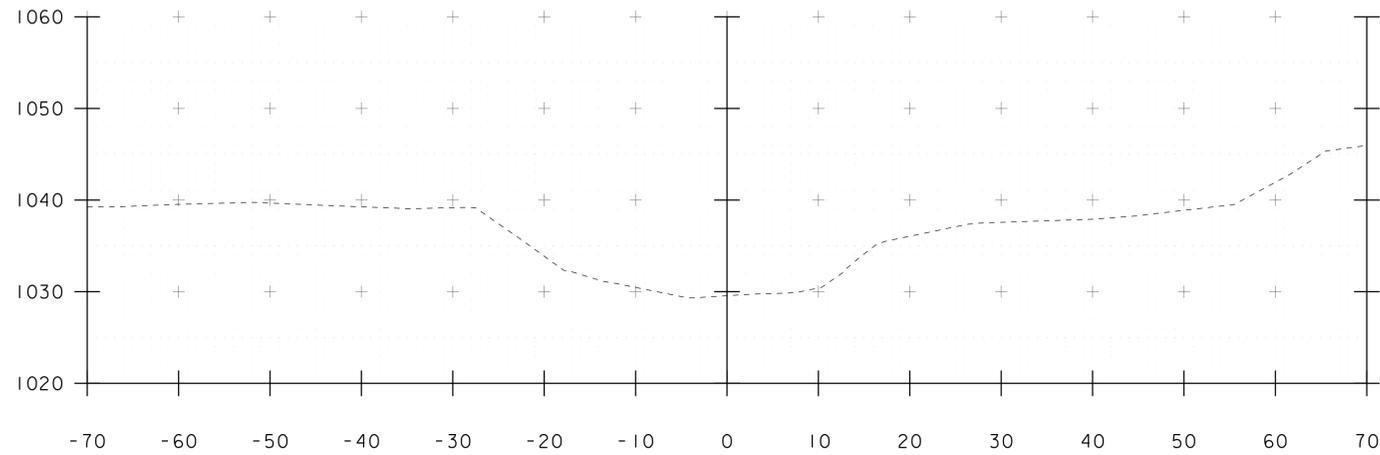
501+00



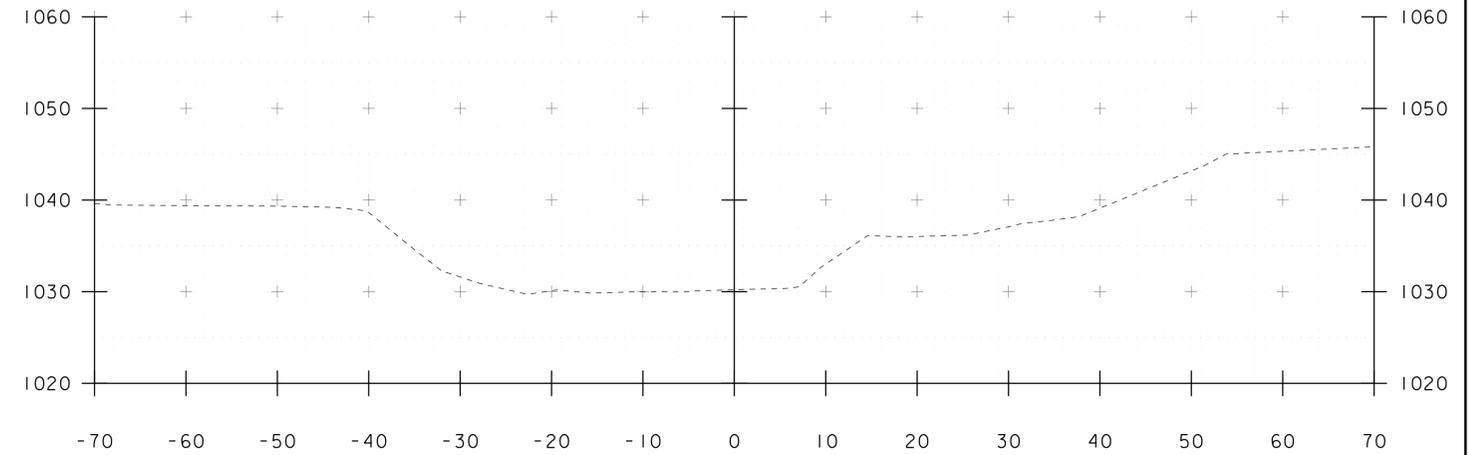
501+50  
END FASSETT HILL RD

STA. 501+00 TO STA. 501+75

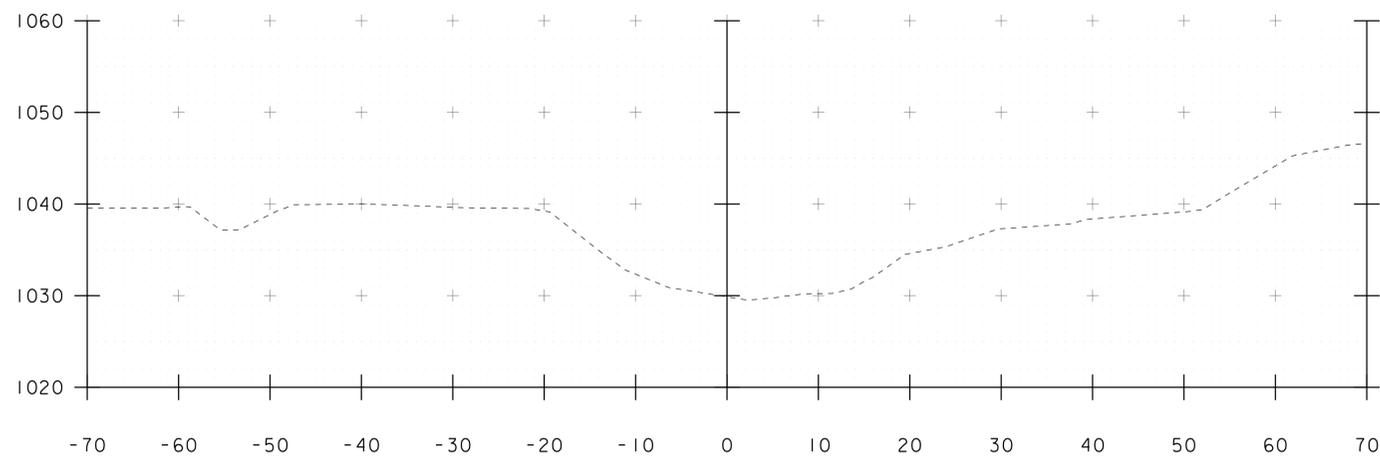
PROJECT NAME: HANCOCK	
PROJECT NUMBER: ER BRF 0174(16)	
FILE NAME: sl1c210xsl.dgn	PLOT DATE: 08-AUG-2012
PROJECT LEADER: K. HIGGINS	DRAWN BY: J. SALVATORI
DESIGNED BY: J. SALVATORI	CHECKED BY: W. LAMMER
FASSETT HILL RD SECTIONS SHEET 2	SHEET 39 OF 44



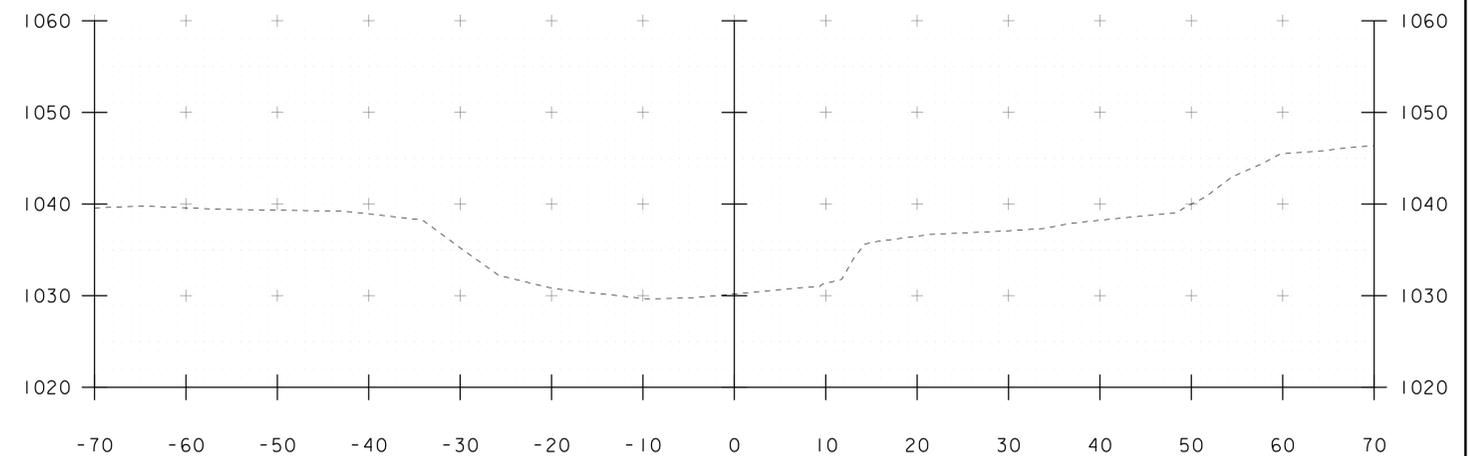
50+25



50+75



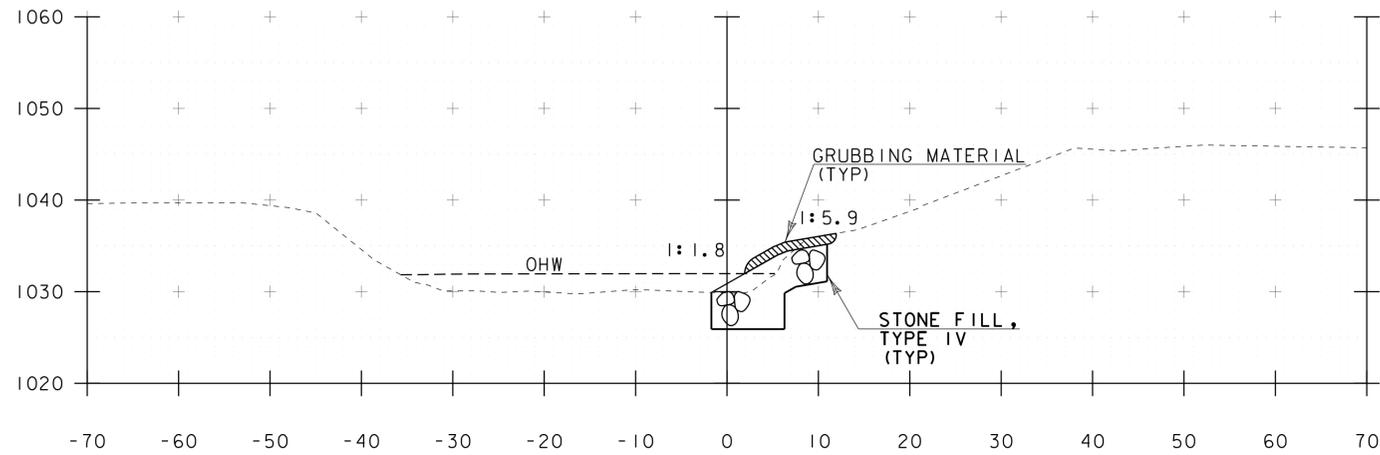
50+00



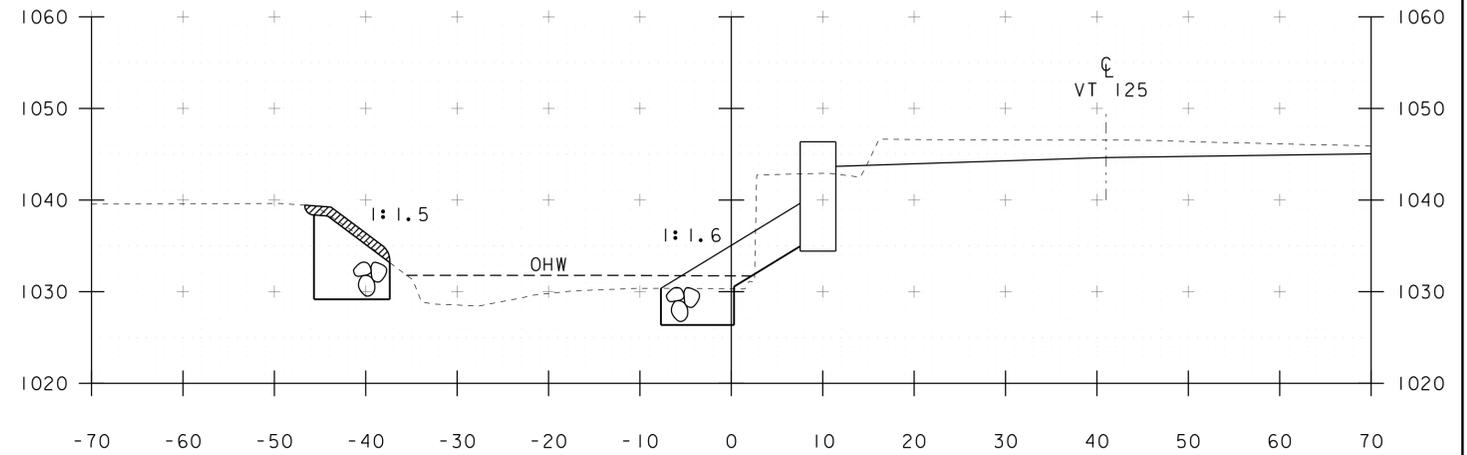
50+50

STA. 50+00 TO STA. 50+75

PROJECT NAME:	HANCOCK	PLOT DATE:	08-AUG-2012
PROJECT NUMBER:	ER BRF 0174(16)	DRAWN BY:	J. SALVATORI
FILE NAME:	slc210xsl.dgn	DESIGNED BY:	J. SALVATORI
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	W. LAMMER
CHANNEL SECTIONS SHEET 1		SHEET	40 OF 44



51+10

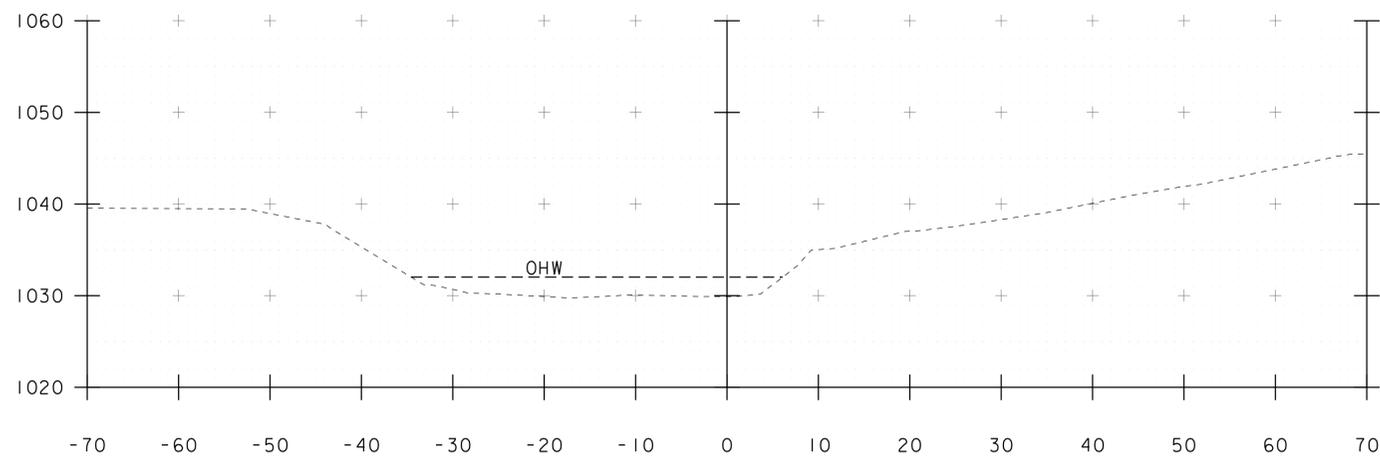


51+30

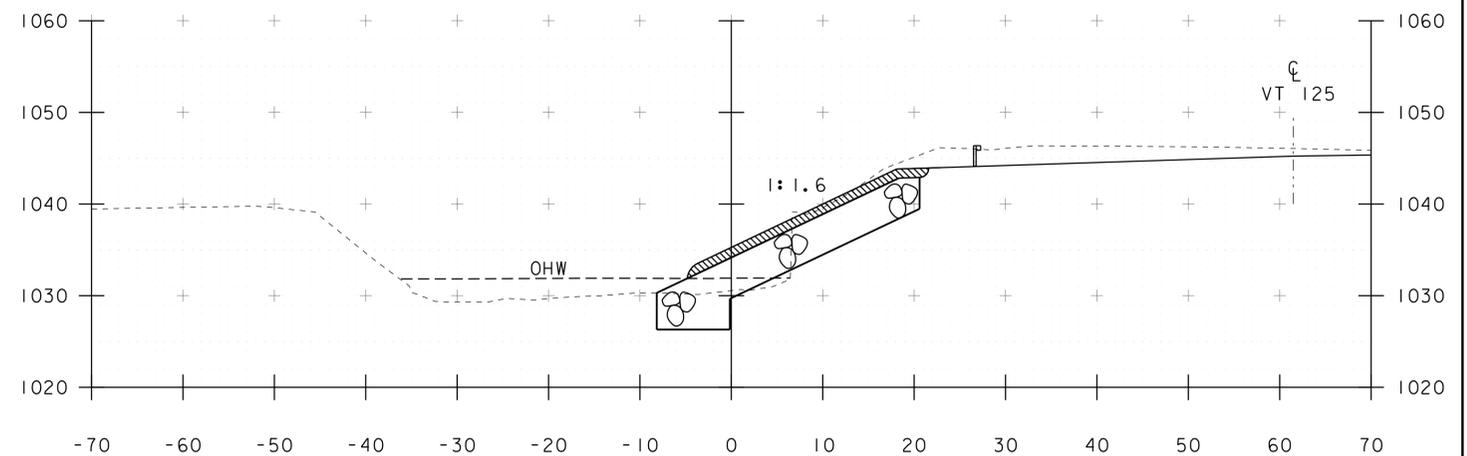
STA 51+05 RT (AB#1)  
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION  
 BEGIN GEOTEXTILE UNDER STONE FILL  
 BEGIN STONE FILL, TYPE IV  
 BEGIN GRUBBING MATERIAL

STA 51+30 LT (AB#2)  
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION  
 BEGIN GEOTEXTILE UNDER STONE FILL  
 BEGIN STONE FILL, TYPE IV  
 BEGIN GRUBBING MATERIAL

STA 51+28 RT (AB#1)  
 END GRUBBING MATERIAL



51+00



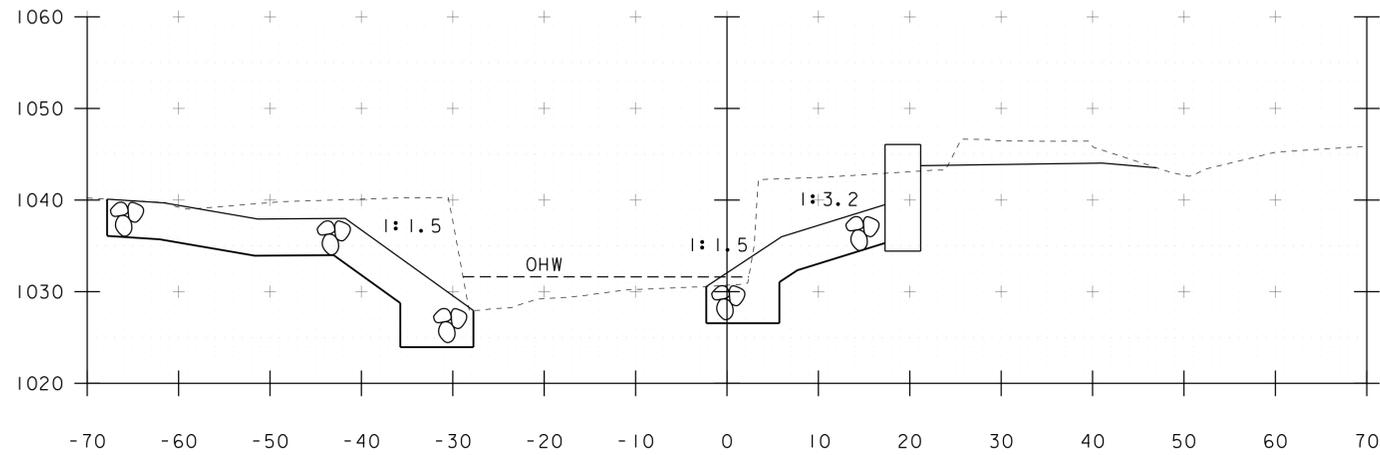
51+20

STA. 51+00 TO STA. 51+30

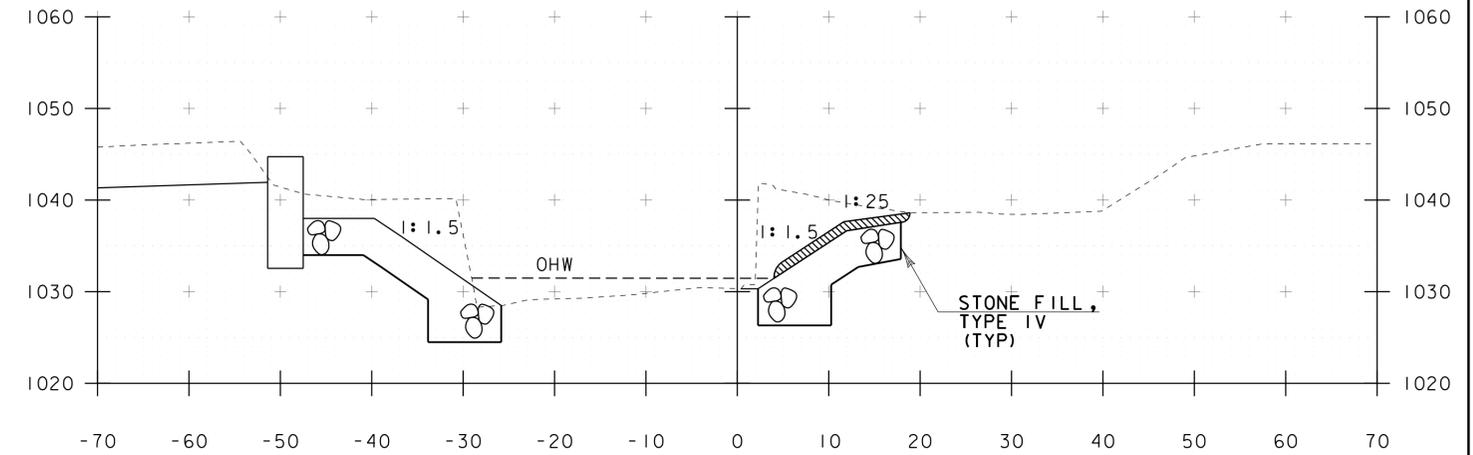
PROJECT NAME:	HANCOCK
PROJECT NUMBER:	ER BRF 0174(16)
FILE NAME:	sl1c210xsl.dgn
PROJECT LEADER:	K. HIGGINS
DESIGNED BY:	J. SALVATORI
CHANNEL SECTIONS SHEET 2	
PLOT DATE:	08-AUG-2012
DRAWN BY:	J. SALVATORI
CHECKED BY:	W. LAMMER
SHEET	41 OF 44

STA 51+72.5 RT (AB\*1)  
 END UNCLASSIFIED CHANNEL EXCAVATION  
 END GEOTEXTILE UNDER STONE FILL  
 END STONE FILL, TYPE IV  
 END GRUBBING MATERIAL

STA 51+67 RT (AB\*1)  
 BEGIN GRUBBING MATERIAL

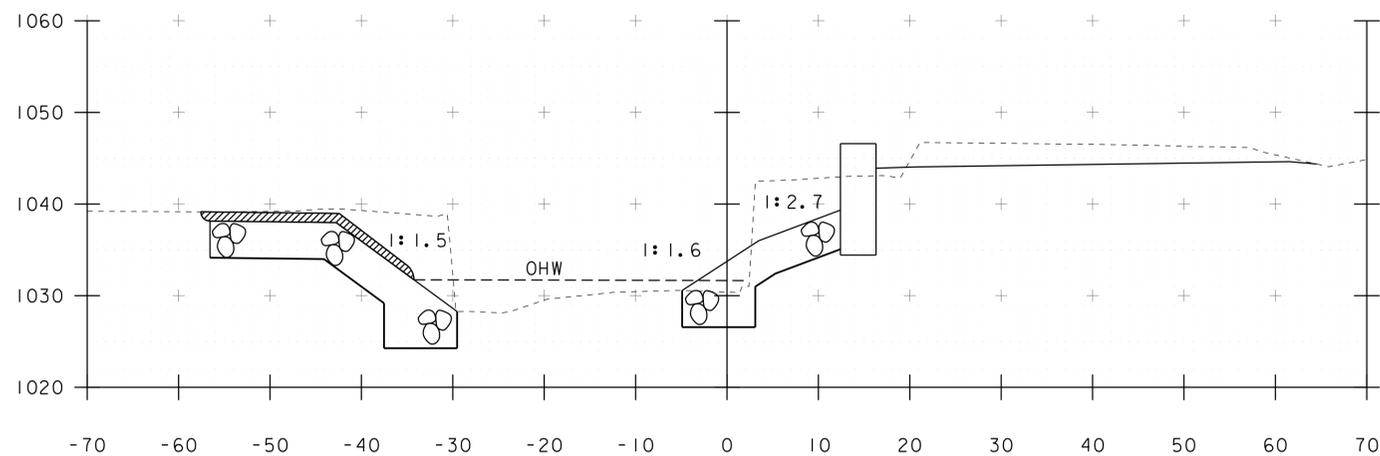


51+50

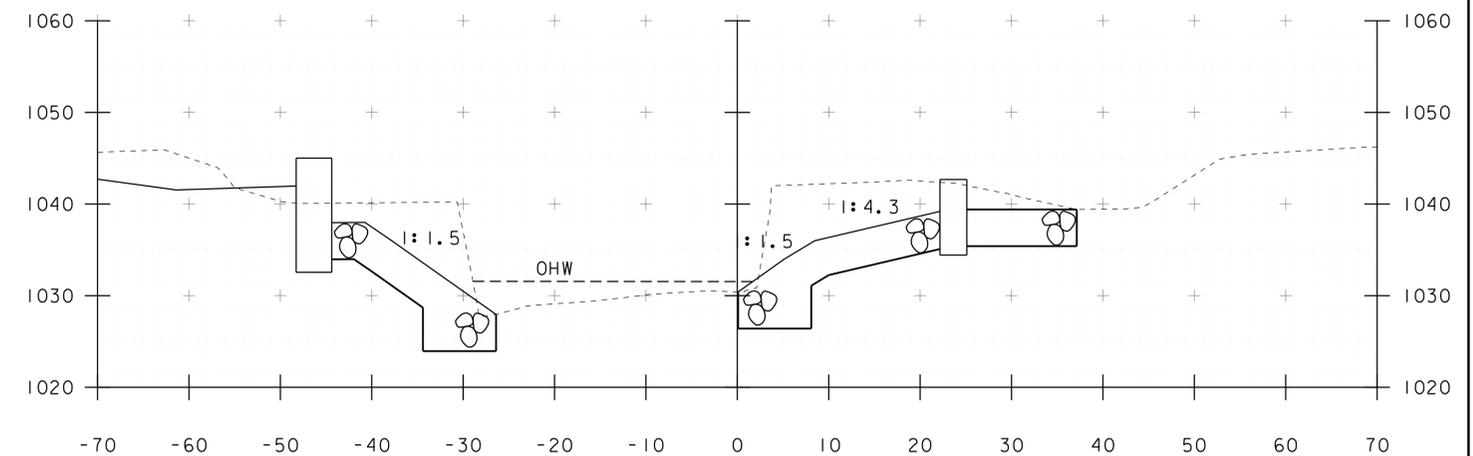


51+70

STA 51+48 LT (AB\*2)  
 END GRUBBING MATERIAL



51+40



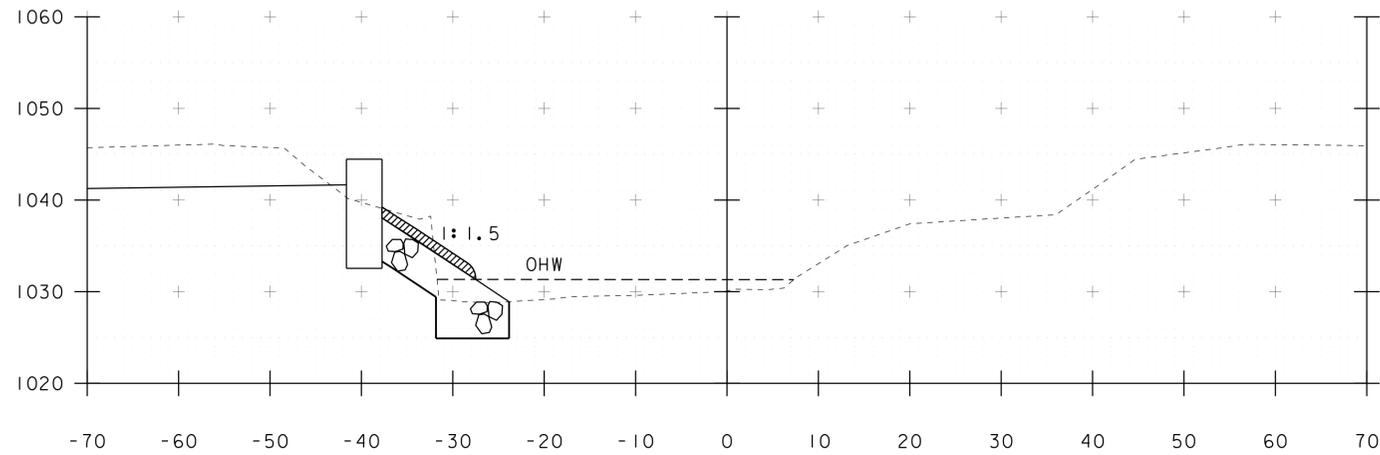
51+60

STA. 51+40 TO STA. 51+70

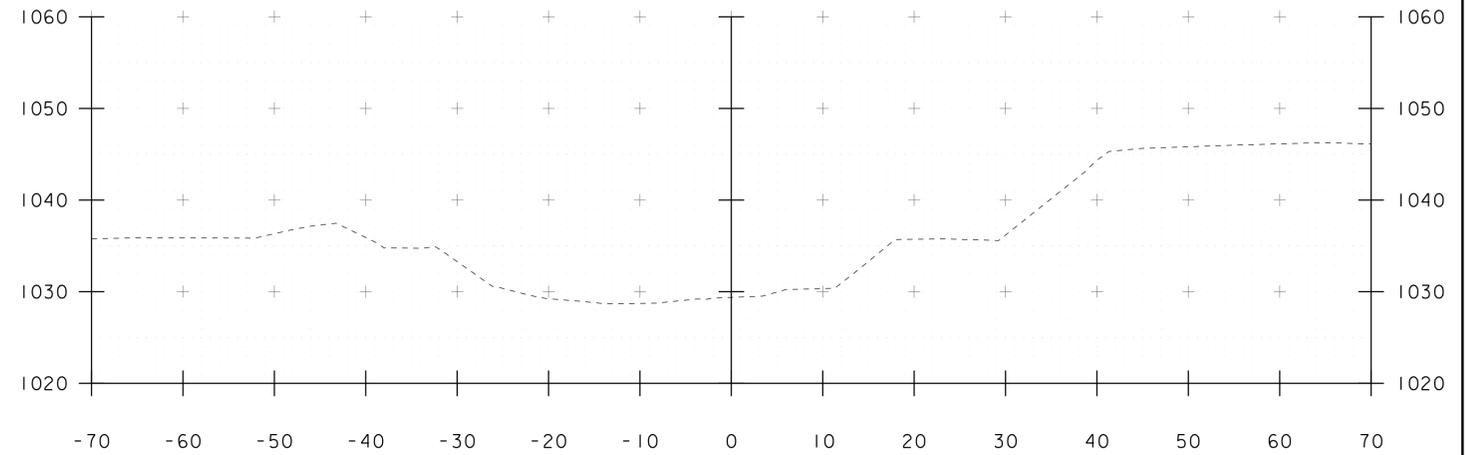
PROJECT NAME: HANCOCK  
 PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sllc210xsl.dgn  
 PROJECT LEADER: K. HIGGINS  
 DESIGNED BY: J. SALVATORI  
 CHANNEL SECTIONS SHEET 3

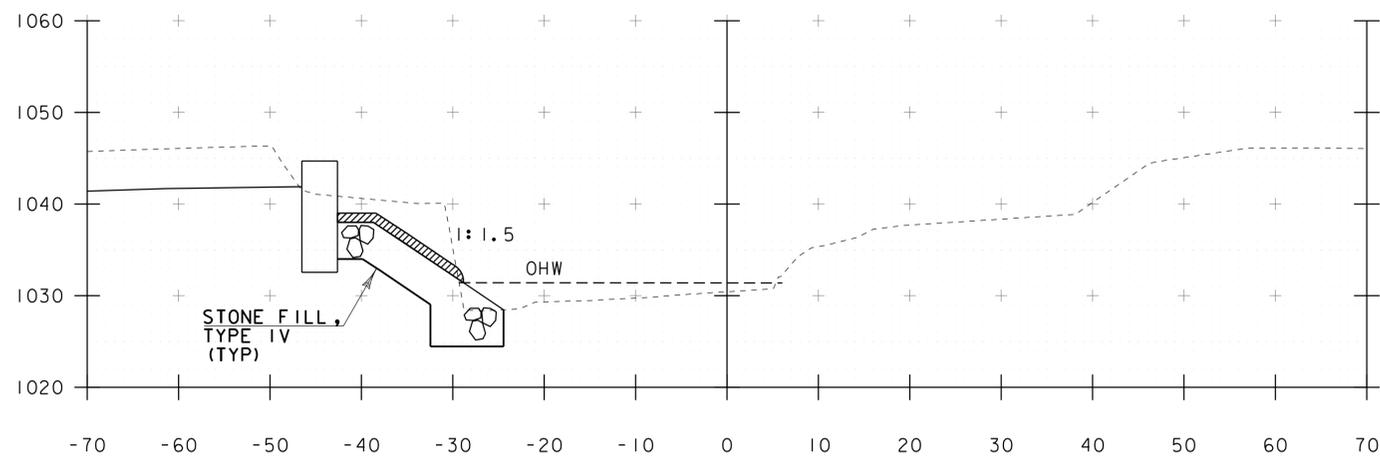
PLOT DATE: 08-AUG-2012  
 DRAWN BY: J. SALVATORI  
 CHECKED BY: W. LAMMER  
 SHEET 42 OF 44



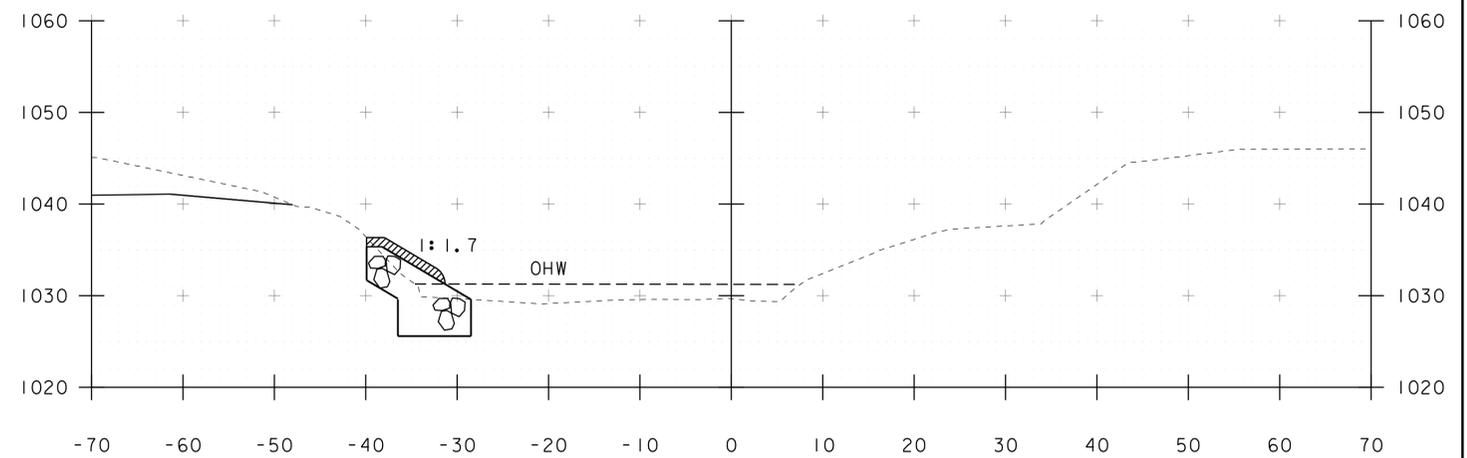
51+90



52+25



51+80



52+00

STA 51+73 LT (AB#2)  
BEGIN GRUBBING MATERIAL

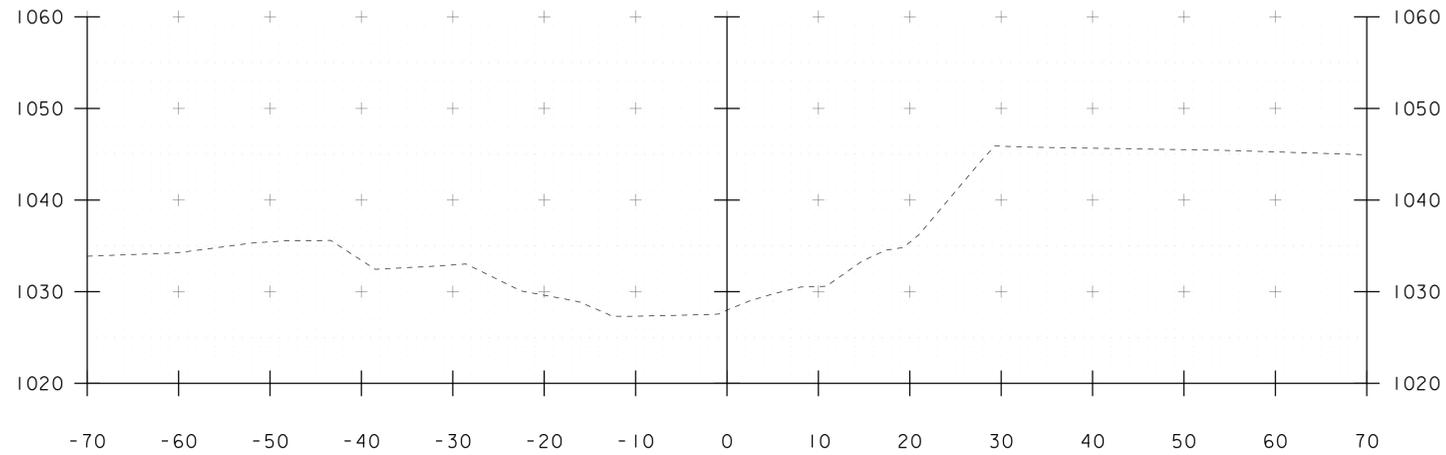
STA 52+00 LT (AB#2)  
END UNCLASSIFIED CHANNEL EXCAVATION  
END GEOTEXTILE UNDER STONE FILL  
END STONE FILL, TYPE IV  
END GRUBBING MATERIAL

STA. 51+80 TO STA. 52+25

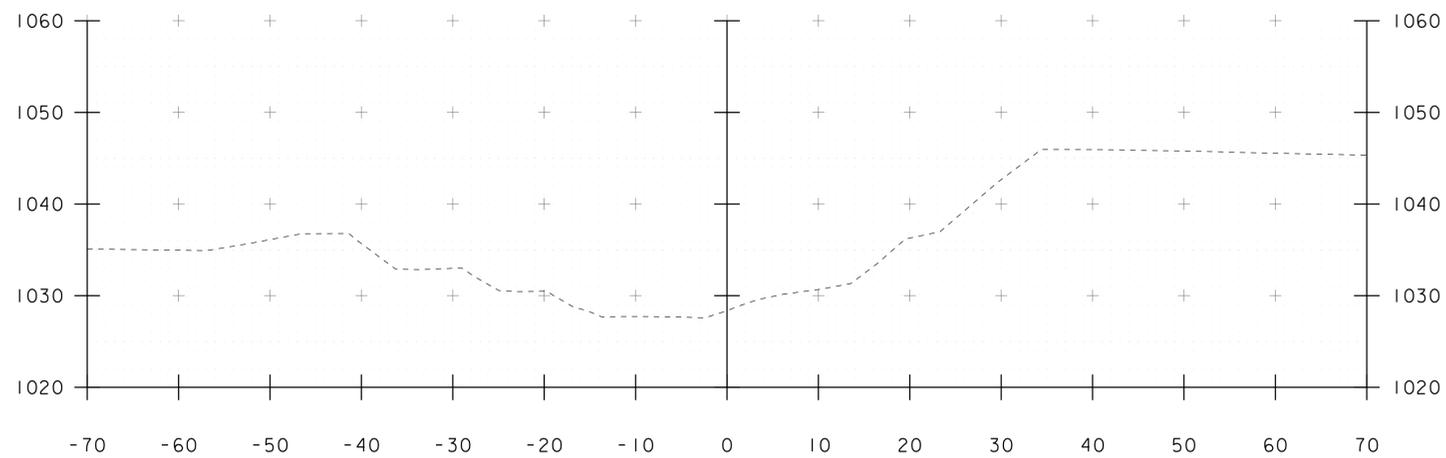
PROJECT NAME: HANCOCK  
PROJECT NUMBER: ER BRF 0174(16)

FILE NAME: sl1c210xsl.dgn  
PROJECT LEADER: K. HIGGINS  
DESIGNED BY: J. SALVATORI  
CHANNEL SECTIONS SHEET 4

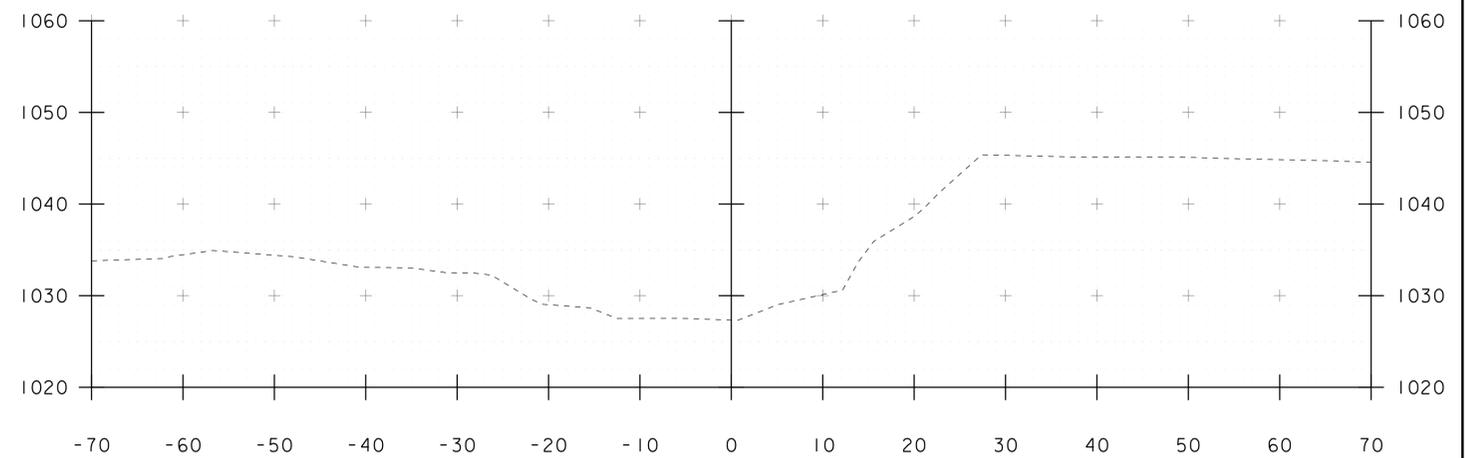
PLOT DATE: 08-AUG-2012  
DRAWN BY: J. SALVATORI  
CHECKED BY: W. LAMMER  
SHEET 43 OF 44



52+75



52+50



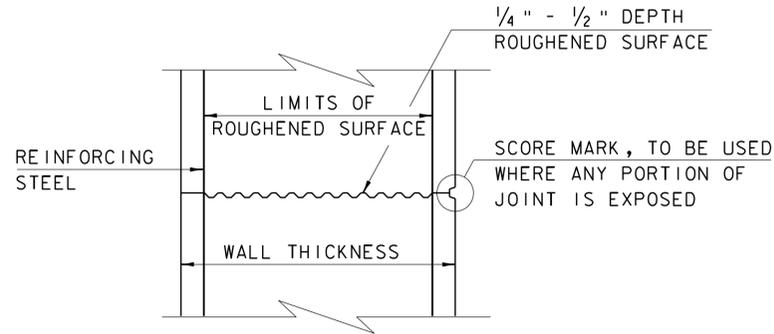
53+00

STA. 52+50 TO STA. 53+00

PROJECT NAME: HANCOCK	PLOT DATE: 08-AUG-2012
PROJECT NUMBER: ER BRF 0174(16)	DRAWN BY: J. SALVATORI
FILE NAME: slc210xsl.dgn	CHECKED BY: W. LAMMER
PROJECT LEADER: K. HIGGINS	SHEET 44 OF 44
DESIGNED BY: J. SALVATORI	
CHANNEL SECTIONS SHEET 5	

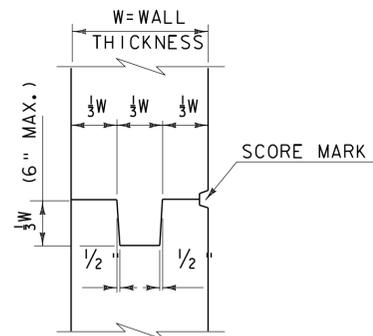
**CONCRETE GENERAL NOTES**

- ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"

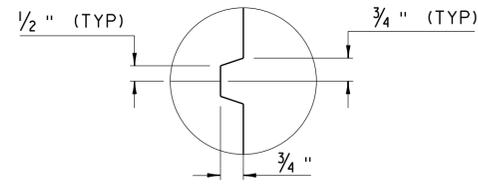


**TYPICAL HORIZONTAL CONSTRUCTION JOINT**  
(NOT TO SCALE)

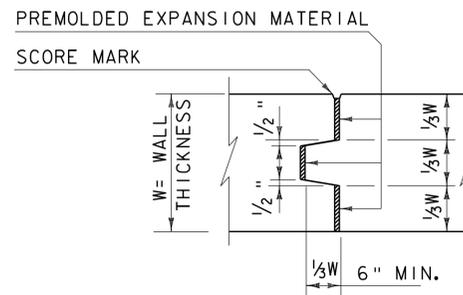
- THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
- IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



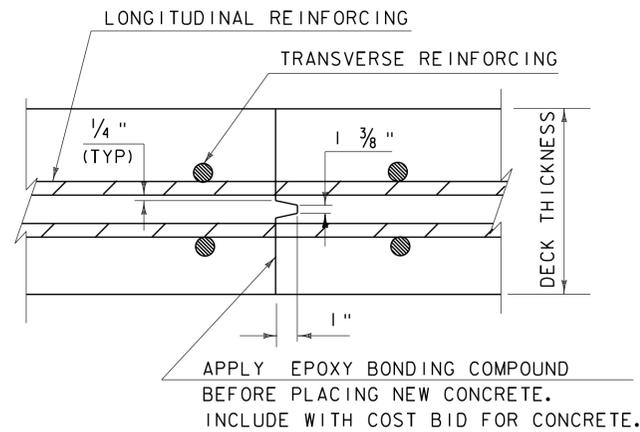
**TYPICAL CONCRETE CONSTRUCTION JOINT**  
(NOT TO SCALE)



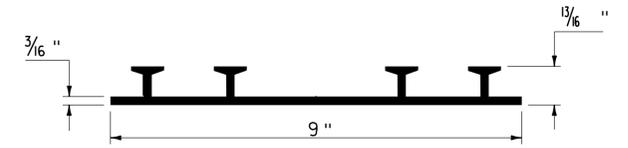
**SCORE MARK DETAIL**  
(NOT TO SCALE)



**TYPICAL CONCRETE EXPANSION JOINT**  
(NOT TO SCALE)



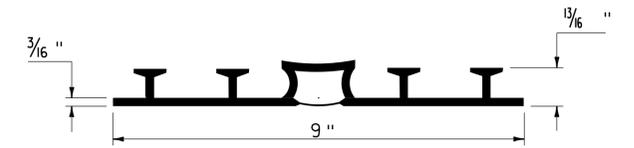
**TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS**  
(NOT TO SCALE)



**P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS**  
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

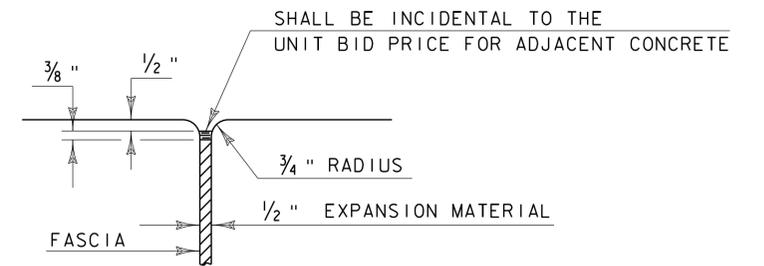
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



**P.V.C. WATERSTOP FOR EXPANSION JOINTS**  
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

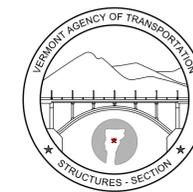
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



**JOINT BETWEEN FASCIA AND WINGWALL**  
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION

**CONCRETE  
DETAILS AND NOTES**

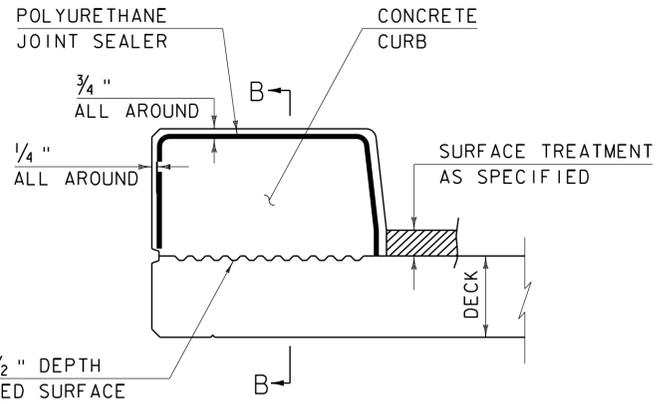


**STRUCTURES  
DETAIL  
SD-5 01.00**

POLYURETHANE JOINT SEALER MEETING THE REQUIREMENTS OF SECTION 524. COLOR TO MATCH CONCRETE. PAYMENT TO BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM

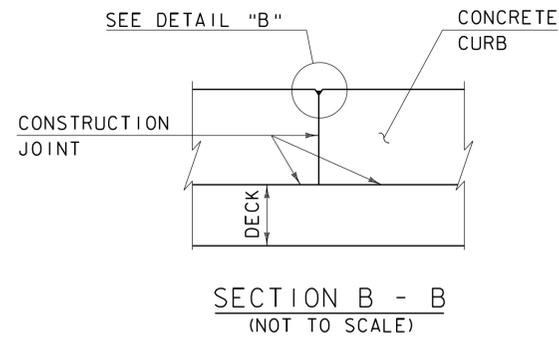
ADHERE TO THESE SURFACES

DETAIL "B"  
(NOT TO SCALE)

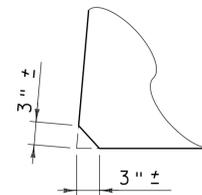


CONCRETE CURB JOINT SECTION  
(NOT TO SCALE)

1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



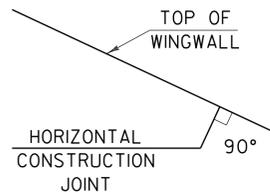
SECTION B - B  
(NOT TO SCALE)



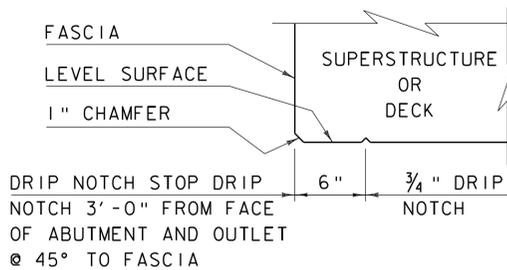
ACUTE ANGLE  
CLIP DETAIL  
(NOT TO SCALE)

CONCRETE CURB JOINT NOTES

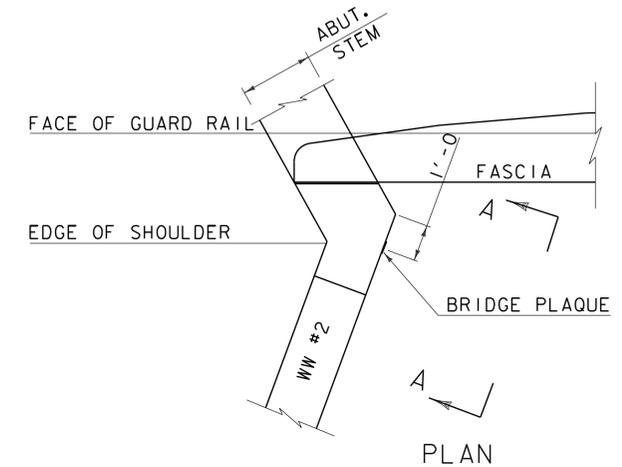
1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.
3. ON MULTI-SPAN CONTINUOUS SUPERSTRUCTURES, REGARDLESS OF WHETHER APPROVED SHRINKAGE REDUCING ADMIXTURE IS USED, CURB JOINTS SHALL BE LOCATED OVER THE CENTERLINE OF PIERS AND 7'-0" EACH SIDE OF THE CENTERLINE OF EACH PIER.
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.
5. LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THROUGH CURB CONSTRUCTION JOINTS. CURB STIRRUP BARS SHALL BE TURNED AS NECESSARY TO MAINTAIN COVER IN THE FLARED CURB ENDS.
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



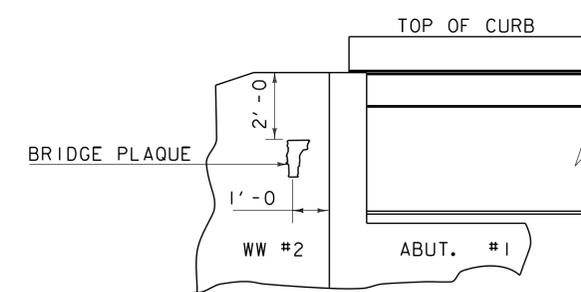
HORIZONTAL WINGWALL  
CONSTRUCTION JOINT  
(NOT TO SCALE)



DRIP NOTCH DETAIL  
(NOT TO SCALE)



PLAN



VIEW "A - A"

BRIDGE PLAQUE  
(NOT TO SCALE)

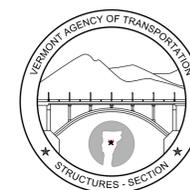
THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

REVISIONS

MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED AND ADDED TWO DETAILS

CONCRETE  
DETAILS AND NOTES



STRUCTURES  
DETAIL  
SD-5 02.00

ASPHALTIC PLUG JOINT NOTES

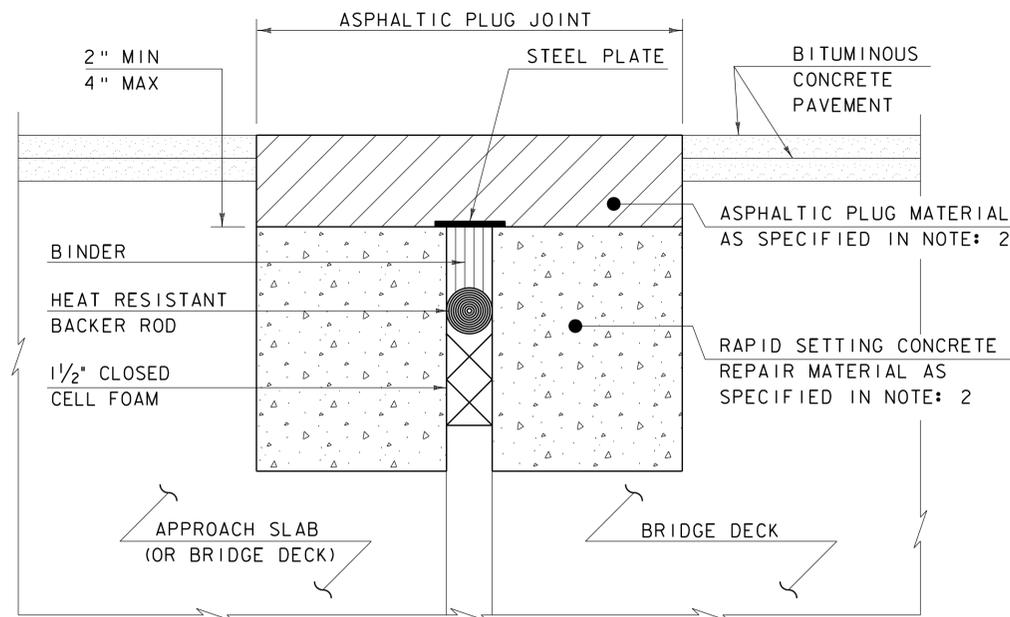
INSTALLATION:

1. LOCATE THE JOINT CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT, MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
2. REMOVE THE BITUMINOUS CONCRETE PAVEMENT FULL DEPTH AS SHOWN ON THE PLANS. THE PAVEMENT SHALL BE DRY AND SAW CUT TO THE LIMITS REQUIRED TO PLACE THE JOINT. A PNEUMATIC HAMMER AND CHISEL MAY BE USED ADJACENT TO THE CURB ONLY WHEN SAW CUTTING IS NOT POSSIBLE.
3. BLAST CLEAN THE JOINT AREA OF DEBRIS, ASPHALT AND SHEET MEMBRANE. THOROUGHLY DRY THE JOINT AREA WITH COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
4. REPAIR MATERIAL GREATER THAN 4 INCHES FROM FINISHED GRADE WITH RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE MEETING THE REQUIREMENTS OF SUBSECTION 780.04.
5. PLACE PROPERLY SIZED HEAT RESISTANT BACKER ROD IN THE MOVEMENT GAP ALLOWING FOR 1" +/- OF BINDER ABOVE THE ROD.
6. HEAT AND PLACE THE BINDER MATERIAL AS RECOMMENDED BY THE MANUFACTURER.
7. PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE ENGINEER DETERMINES THAT THE APPROACH SLAB OR BRIDGE DECK WILL PROVIDE INADEQUATE SUPPORT AND WHERE VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.
8. HEAT AND MIX THE BINDER MATERIAL AND AGGREGATE AS RECOMMENDED BY THE MANUFACTURER.
9. INSTALLATION OF MATERIAL, COMPACTION, AND TOP COATING SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
10. IMMEDIATELY AFTER TOP COATING, CAST AN ANTI-SKID MATERIAL OVER THE JOINT TO REDUCE THE RISK OF TRACKING.
11. ONCE THE JOINT REACHES 82 DEG C (180 DEG F) +/-, WATER MAY BE USED TO EXPEDITE THE COOLING PROCESS.
12. PROTECT JOINT FROM TRAFFIC UNTIL THE MATERIAL HAS COOLED TO 51 DEG C (125 DEG F) +/-.

WEATHER LIMITATIONS

APPLY BINDER MATERIAL ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL OR AS RECOMMENDED BY THE MANUFACTURER:

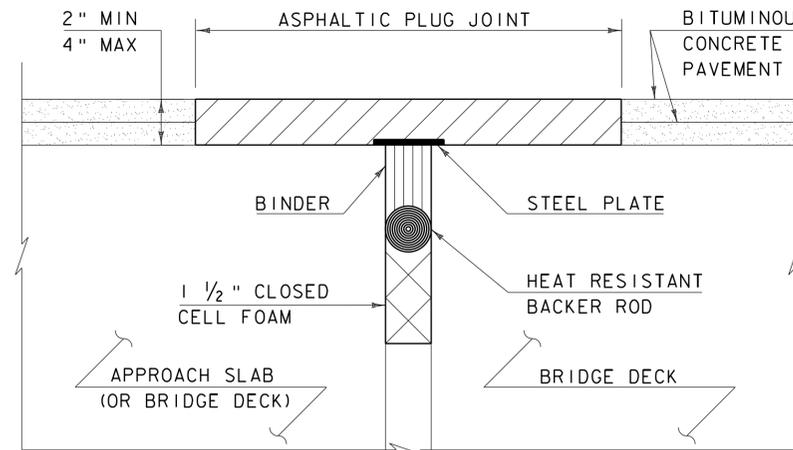
1. THE AMBIENT AIR TEMPERATURE IS AT LEAST 10 DEG C (50 DEG F) AND RISING.
2. THE ROAD SURFACE IS DRY.
3. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.



ASPHALTIC PLUG-TYPE JOINT DETAIL - REHAB

NOTES: (NOT TO SCALE)

1. THE CONTRACTOR SHALL REMOVE ALL ASPHALTIC PLUG JOINT MATERIAL AND DETERIORATED CONCRETE AS DIRECTED BY THE ENGINEER. REMOVAL OF THE FIRST 4 INCHES OF MATERIAL SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 516.10 BRIDGE EXPANSION JOINT, ASPHALTIC PLUG. ANY REMOVAL OF MATERIAL GREATER THAN 4 INCHES SHALL BE INCLUDED IN THE BID PRICE OF ITEM 580.20 RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE.
2. THE CONTRACTOR SHALL REPLACE REMOVED MATERIAL THAT IS LESS THAN 4" FROM FINISHED GRADE WITH ASPHALTIC PLUG JOINT MATERIAL MEETING THE REQUIREMENTS OF SUBSECTION 707.15. ALL REMOVED MATERIAL THAT IS GREATER THAN 4 INCHES FROM FINISHED GRADE SHALL BE REPLACED WITH RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE MEETING THE REQUIREMENTS OF SUBSECTION 780.04.
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.

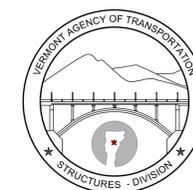


ASPHALTIC PLUG-TYPE JOINT DETAIL - NEW  
(NOT TO SCALE)

REVISIONS

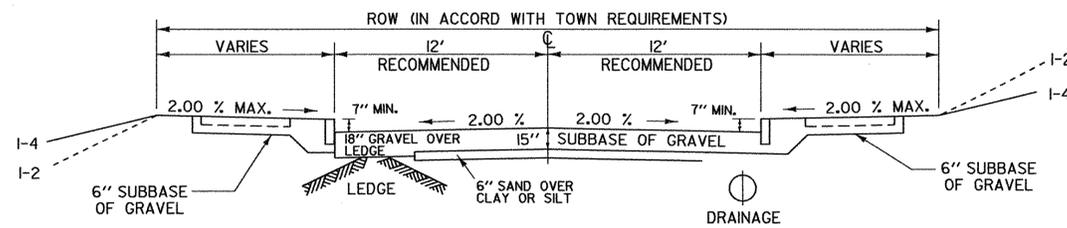
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION

BRIDGE JOINT  
ASPHALTIC PLUG

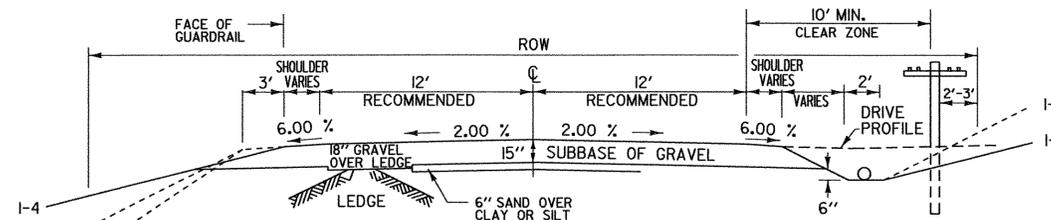


STRUCTURES  
DETAIL  
SD-516.10

## ROADWAY TYPICALS

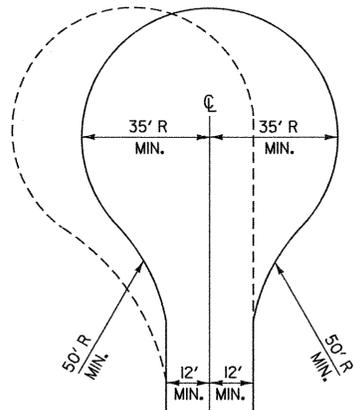


TYPICAL - CURBED SECTION WITH 5' SIDEWALKS

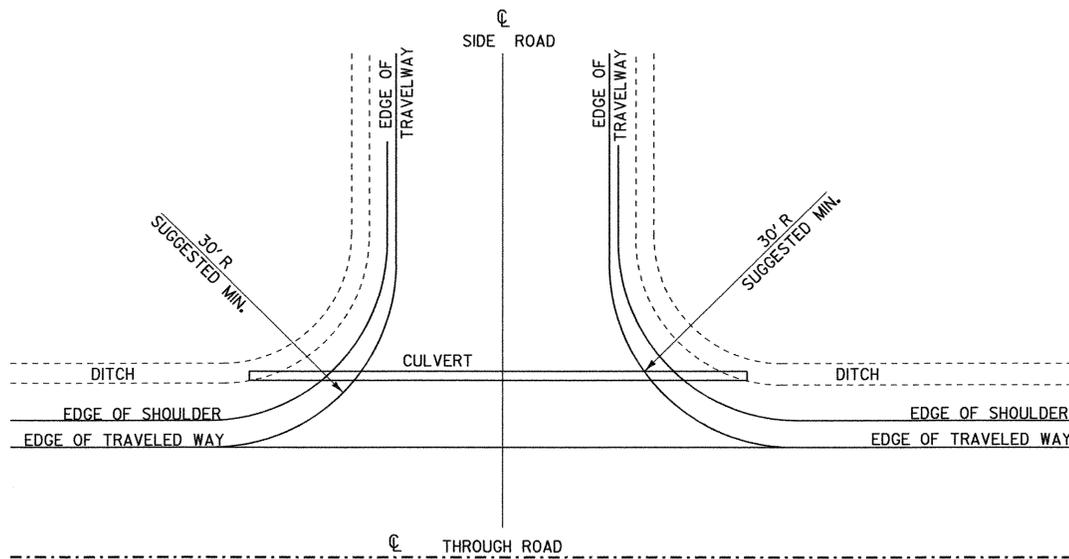


TYPICAL - NON-CURBED SECTION WITH DITCH

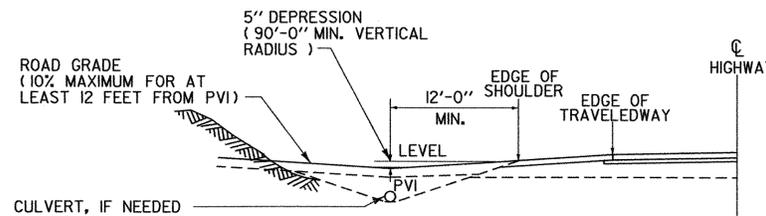
### CUL-DE-SAC FOR DEAD END ROADS



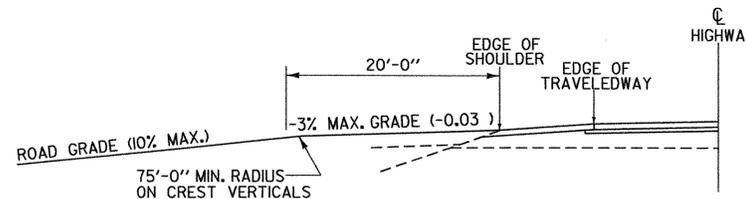
### INTERSECTION OF THROUGH ROAD AND SIDE ROAD



FOR THROUGH ROADS WITH SIDEWALKS & CURBING, SEE STANDARDS C2 & C3.  
PROVIDE DROP INLETS ON EACH SIDE OF SIDE ROAD AT INTERSECTION AS NECESSARY.



PROFILE OF INTERSECTION ( CUT SECTION )  
SHOWING 5" DEPRESSION



PROFILE OF INTERSECTION ( FILL SECTION )

## GENERAL NOTES FOR LOCAL ROADS

1. SUBBASE, SAND CUSHION AND SUBGRADE SHOULD BE CONSTRUCTED AND COMPACTED TO THE DIMENSIONS SHOWN IN ACCORDANCE WITH VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. WHERE LOCAL ORDINANCES HAVE BEEN ADOPTED RELATIVE TO ROAD DIMENSIONS AND CONSTRUCTION, THEY SHOULD GOVERN. THE DIMENSIONS SUGGESTED ARE INTENDED TO BE APPLIED ONLY IN LOW TRAFFIC VOLUME CONDITIONS (AVERAGE DAILY TRAFFIC LESS THAN 250 VEHICLES PER DAY), AND WHERE HEAVY TRUCK TRAFFIC IS INFREQUENT.
2. EXPOSED EARTH SLOPES SHOULD BE SEEDED, FERTILIZED AND MULCHED IN ACCORDANCE WITH VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. DRAINAGE:
  - ROADWAY - 18" MINIMUM DIAMETER, OF METAL, REINFORCED CONCRETE OR POLYETHYLENE PIPE, WITH DROP INLETS OR CATCH BASINS, AS REQUIRED. HYDRAULIC ANALYSIS TO DETERMINE APPROPRIATE PIPE DIAMETER IS RECOMMENDED FOR ALL LIVE STREAM CROSSINGS AND ELSEWHERE WHERE LARGE STORM FLOWS MAY BE EXPECTED.
  - DRIVES - 15" MINIMUM DIAMETER, OF METAL, REINFORCED CONCRETE OR POLYETHYLENE PIPE.
  - UNDERDRAIN - 6" MINIMUM DIAMETER, OF METAL, PVC PLASTIC OR POLYETHYLENE PIPE.
- LOCATION, DEPTH AND CONSTRUCTION DETAILS SHOULD FOLLOW PRACTICE SPECIFIED BY LOCAL ORDINANCE OR THE VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

### 4. HORIZONTAL CURVATURE - THE FOLLOWING WILL APPLY:

DESIGN SPEED	MINIMUM RADII RURAL ①	MINIMUM RADII URBAN ②
	25 MPH	185 FT.
30 MPH	275 FT.	300 FT.
35 MPH	380 FT.	460 FT.
40 MPH	510 FT.	675 FT.
45 MPH	660 FT.	945 FT.
50 MPH	835 FT.	1280 FT.

- ① BASED ON CROSS SLOPE = 6.0 %
  - ② BASED ON MAINTAINING NORMAL CROWN SECTION THROUGHOUT CURVE : EFFECTIVE CROSS SLOPE = 2.0 %
- FOR OTHER SUPERELEVATION RATES, SEE CHAPTER III OF THE AASHTO "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" FOR APPROPRIATE CURVE RADII.

5. GRADIENT OF ROADS - 10% MAXIMUM GRADE SUGGESTED, ALTHOUGH GRADES UP TO 16 % MAY BE ALLOWED IN MOUNTAINOUS TERRAIN.
6. GUARD RAIL - PROVIDE GUARD RAIL WITH TREATED WOOD OR STEEL POSTS, OF A DESIGN IN ACCORDANCE WITH VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE AASHTO ROADSIDE DESIGN GUIDE, AND VAOT STANDARD DRAWINGS. GENERALLY, WHERE SLOPES ARE 1:3 OR STEEPER, AND THE HEIGHT OF DROPOFF AT EDGE OF SHOULDER EXCEEDS 5', GUARD RAIL SHOULD BE INSTALLED. ALSO, WHERE SLOPES ARE 1:3 OR FLATTER, GUARD RAIL MAY NOT BE NEEDED IF THE AREA AT THE BOTTOM OF THE SLOPE IS FREE OF HAZARDS. THE LOCAL VAOT DISTRICT TRANSPORTATION ADMINISTRATOR MAY BE CONTACTED FOR ASSISTANCE.
7. PAVING - ROADS WITH GRADES EXCEEDING 7% SHOULD BE PAVED UNLESS WAIVED BY THE LOCAL GOVERNING BODY. FOR TRAFFIC VOLUMES GREATER THAN, OR EQUAL TO, 250 VEHICLES PER DAY, OR WHERE HEAVY TRUCKS ARE COMMON, A PAVEMENT DESIGN SHOULD BE PERFORMED TO DETERMINE APPROPRIATE THICKNESSES OF SUBBASE AND PAVEMENT.
8. TRAVELED WAY AND SHOULDER WIDTHS - WIDTHS SHOWN ON THIS STANDARD ARE FOR LOW SPEED/LOW TRAFFIC VOLUME CONDITIONS. FOR ADDITIONAL GUIDANCE IN THE DESIGN OF LOCAL ROADS AND STREETS, SEE THE LATEST EDITION OF AASHTO'S PUBLICATION "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS", OR THE VAOT "VERMONT STATE STANDARDS".
9. UTILITY LINE LOCATION TO CONFORM TO LOCAL REQUIREMENTS.

REVISIONS AND CORRECTIONS  
 JAN. 21, 1971 - ORIGINAL DATE OF ISSUE  
 MAR. 12, 1971 - DIMENSIONS CHANGED ON TURN-A-ROUND  
 JULY 13, 1973 - INTERSECTION PROFILES ADDED  
 DEC. 7, 1993 - REVISED TO REFLECT CURRENT DESIGN CRITERIA  
 JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.  
 MAR. 10, 1995 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.  
 MARCH 3, 2003 - REVISED TO REFLECT CURRENT DESIGN CRITERIA

APPROVED

*[Signature]*  
 DIRECTOR OF PROGRAM DEVELOPMENT

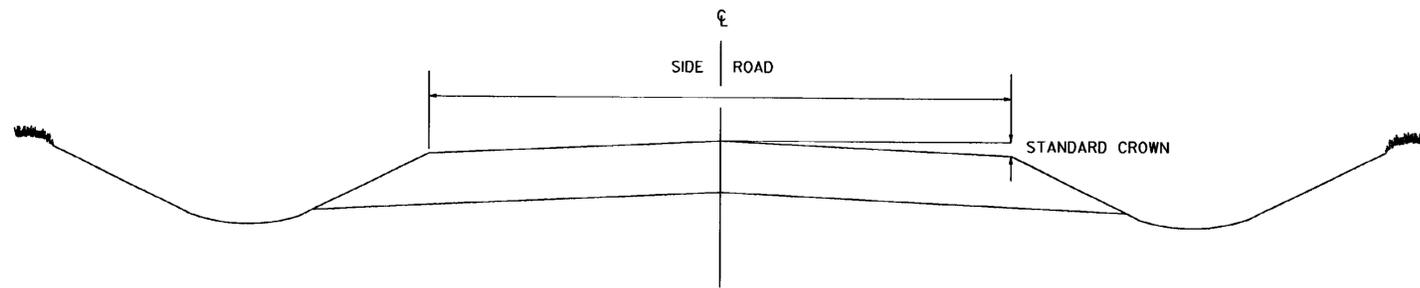
*[Signature]*  
 CHIEF OF UTILITIES

*[Signature]*  
 FEDERAL HIGHWAY ADMINISTRATION

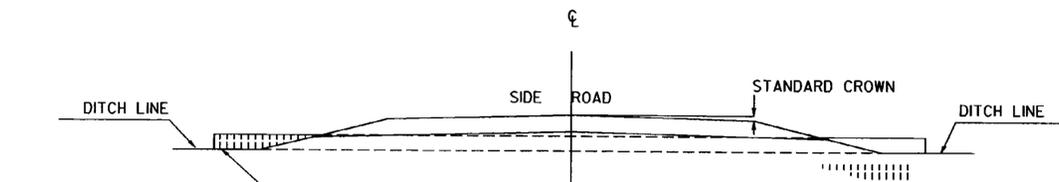
## STANDARDS FOR TOWN & DEVELOPMENT ROADS



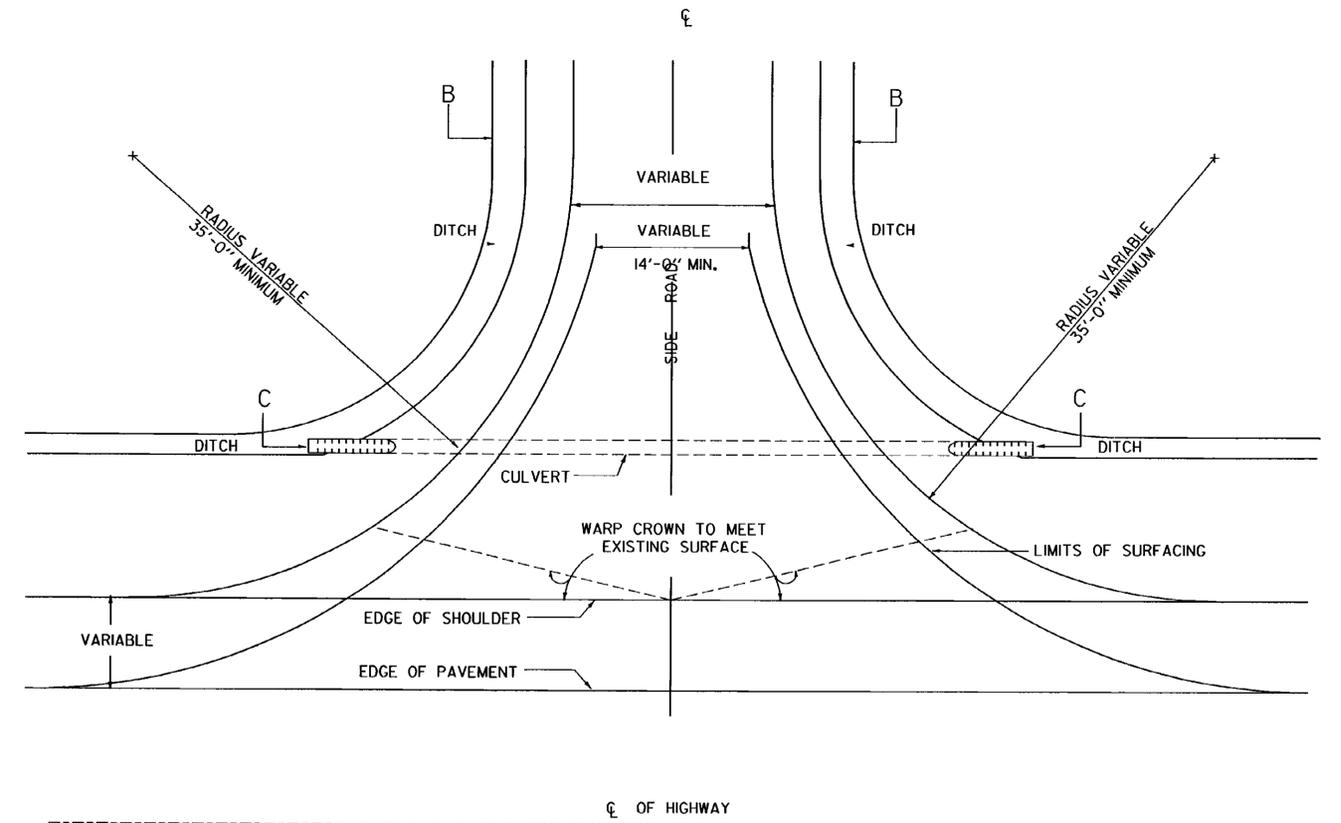
# STANDARD A-76



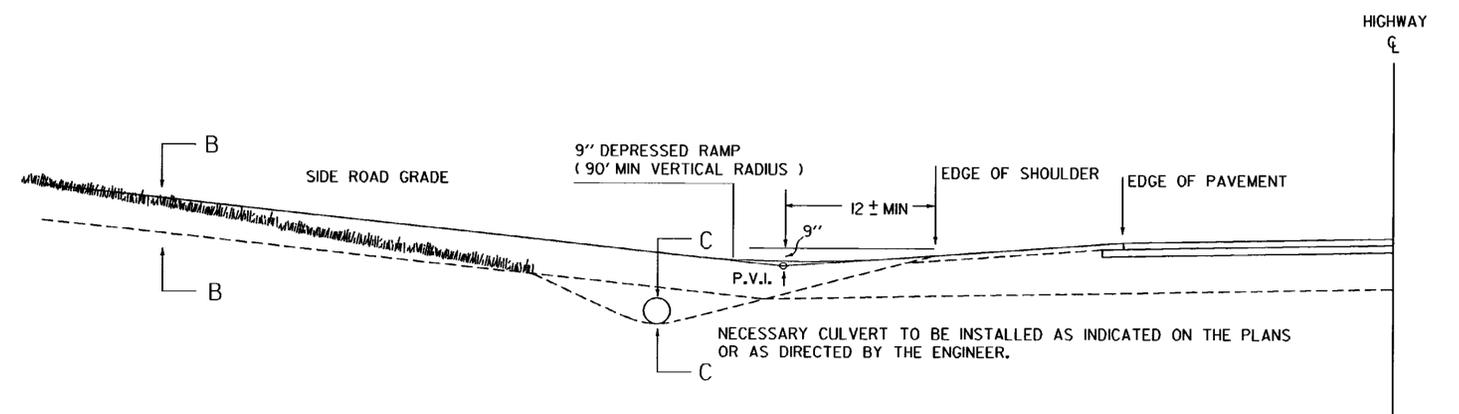
SECTION B - B



SECTION C - C



PLAN OF SIDE ROAD INTERSECTION



PROFILE OF SIDE ROAD INTERSECTION  
SHOWING 9" DEPRESSED RAMP

REVISIONS AND CORRECTIONS  
DEC. 14, 1971 - ORIGINAL APPROVAL DATE  
JUNE 1, 1994 - REISSUED, WITHOUT CHANGE,  
UNDER NEW SIGNATURES.

APPROVED

APPROVED FOR THIS PROJECT  
AND/OR DESIGN IMPLEMENTATION.  
FHWA FINAL APPROVAL PENDING.

*Stephen D. MacArthur, P.E.*  
DIRECTOR OF ENGINEERING

*John W. Mangel, P.E.*  
DESIGN ENGINEER

# SIDE ROAD INTERSECTION SHOWING DEPRESSED RAMP



# STANDARD B-12

**NOTES CONT.**

**MAINTENANCE**

SIGNS SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION SATISFACTORY TO THE ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO APPROACHING TRAFFIC AT ALL TIMES. THEY SHALL BE KEPT PLUMB AND LEVEL, AND ALWAYS PRESENT A NEAT APPEARANCE. DAMAGED, DEFACED, OR DIRTY SIGNS SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER.

**GENERAL**

THE COST OF FURNISHING, INSTALLING, MAINTAINING AND REMOVING ALL CONSTRUCTION APPROACH SIGNS WILL BE CONSIDERED INCIDENTAL WORK PERTAINING TO THE PROJECT AS A WHOLE AND SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR VARIOUS ITEMS INVOLVED IN THE CONTRACT. DURING ALL PHASES OF CONSTRUCTION THE REQUIREMENTS SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" SHALL BE MET.

**SIGN COVERS**

SIGN COVERS SHALL CONSIST OF A PANEL PAINTED FLAT BLACK, THE SAME SIZE AS THE SIGN IT COVERS. THE PANEL SHALL BE OF WOOD, PLYWOOD, HARDBOARD OR ANY MATERIAL SATISFACTORY TO THE ENGINEER. NO MATERIAL WILL BE APPROVED THAT WILL DETERIORATE BY EXPOSURE TO THE WEATHER DURING THE PROJECT. MOUNTING OF THE PANEL SHALL BE DONE IN SUCH A WAY AS NOT TO DAMAGE THE SIGN FACE MATERIAL.

CONTRACTORS SHALL COORDINATE THEIR SIGNING ACTIVITIES WITH OTHER CONTRACTORS WITHIN THE PROJECT LIMITS, AS DIRECTED BY THE REGIONAL CONSTRUCTION ENGINEER.

**SIGN POSTS**

WHERE CONSTRUCTION SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARD RAIL OR OTHER APPROVED TRAFFIC BARRIERS, THE POSTS ON WHICH THE SIGNS ARE MOUNTED SHALL BE YIELDING METAL POSTS AS DESIGNATED IN THE E SERIES OF STANDARD DRAWINGS OR YIELDING WOODEN POSTS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

WOODEN POSTS ARE ACCEPTABLE FOR USE WITH CONSTRUCTION SIGNS. THESE POSTS SHALL HAVE A UNIFORM CROSS-SECTION AND SHALL BE MADE FROM GRADE 2, AIR-DRIED SOUTHERN YELLOW PINE OR ANOTHER EQUIVALENT SOFTWOOD. AN ACCEPTABLE EQUIVALENT SOFTWOOD SHALL HAVE AN EXTREME FIBER IN BENDING "FB" DESIGN VALUE NOT TO EXCEED 1400 PSI AND HORIZONTAL SHEAR "FV" DESIGN VALUE NOT TO EXCEED 90 PSI SPECIFICATION. "DESIGN VALUES FOR WOOD CONSTRUCTION" AND RELATED SUPPLEMENT, LATEST EDITION.

AS ESTABLISHED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION IN THEIR NATIONAL DESIGN. THE FOLLOWING ARE CONSIDERED TO BE ACCEPTABLE WOODEN POSTS:

- 1. 4" X 4" (ACTUAL DIMENSIONS ARE S4S 3.5" X 3.5")
- A) ACCEPTABLE FOR SINGLE OR DUAL POSTS INSTALLATION WITH NO MODIFICATIONS.

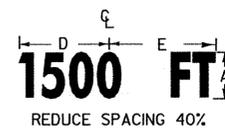
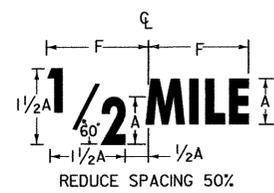
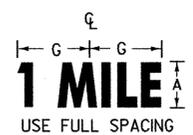
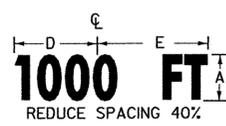
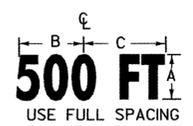
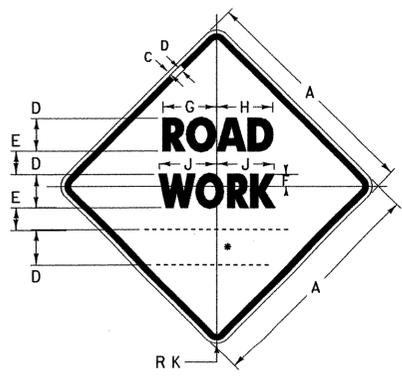
ALL WOODEN POSTS SHALL HAVE AN EMBEDMENT DEPTH OF 4 FEET. NO CROSS-BRACING OR BACK-BRACING TO KEEP THE POSTS PLUMB WILL BE ALLOWED. CONCRETE FOUNDATIONS, COLLARS, OR SOIL BEARING PLATES ARE NOT PERMITTED. CONSTRUCTION SIGNS SHALL BE PLACED ON TWO OR MORE POSTS WHEN ANY OF THE FOLLOWING CONDITIONS GOVERN:

- A) THE SIGN WIDTH (HORIZONTAL DIMENSIONS FOR DIAMOND SHAPED SIGNS) EXCEEDS 3 1/2 FEET.
- B) THE EXPOSED SIGN AREA OF ANY SINGLE SIGN OR ASSEMBLY EXCEEDS 7 SQ. FEET.
- C) THE Sv OF A SINGLE POST IS 64.

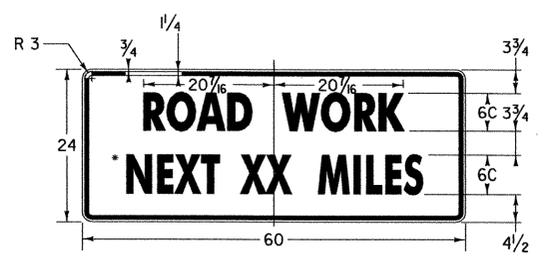
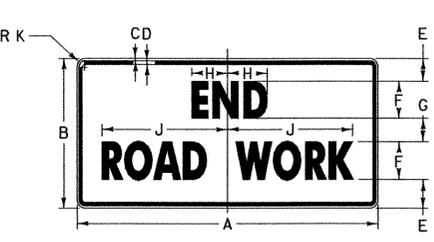
**OTHER STDS. REQUIRED:** E-100A, E-101, E-102



**STANDARD  
E-100**



**DISTANCE DETAILS**



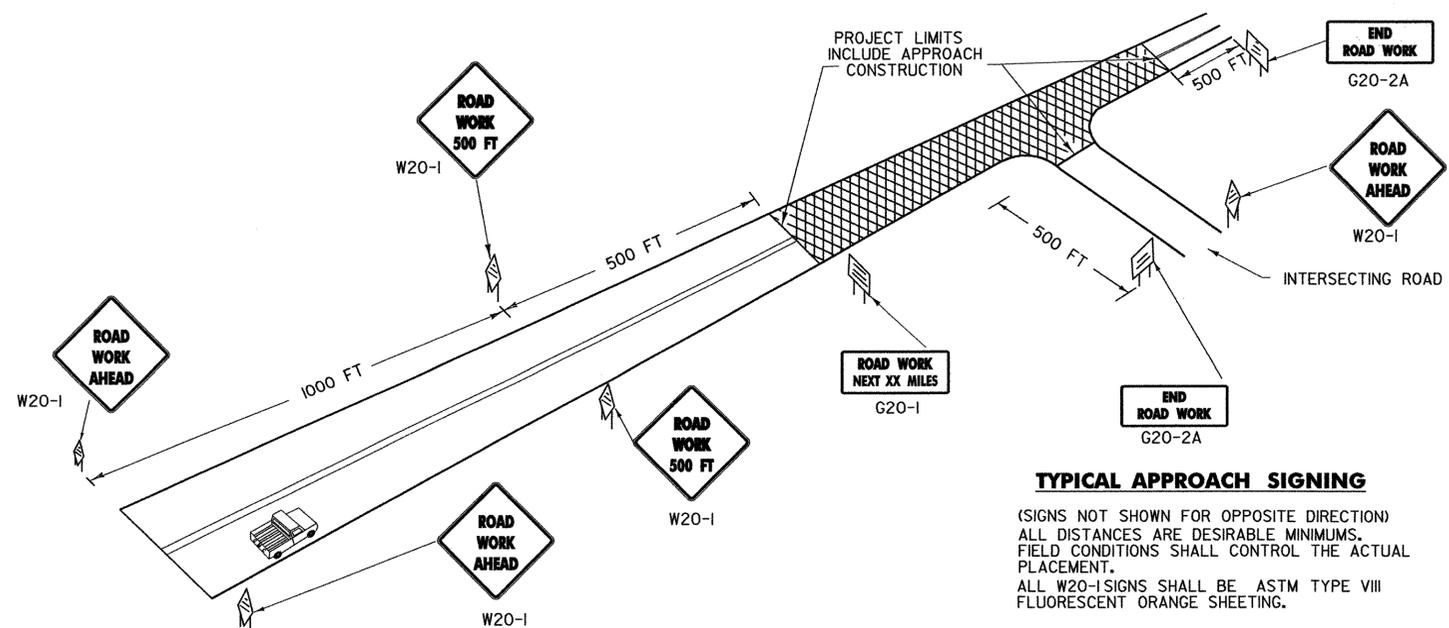
SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
MIN.	36	18	3/8	7/8	3 3/4	4C	2 1/2	4	12 5/8	2 1/4
STD.	48	24	3/4	1 1/4	4 1/8	6C	3 3/4	5 7/8	22	3

\* OPTICALLY CENTER  
THIS SIGN TO BE USED WHEN PROJECT LENGTH EXCEEDS 2 MILES OR AS REQUESTED BY THE RESIDENT ENGINEER. SHOW MILEAGE TO NEAREST 1/4 MILE USING FRACTIONS, NOT DECIMALS. HAND LETTERING OF MILEAGE WILL NOT BE ALLOWED.

SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
MIN.	36	3/8	7/8	5D	3 1/2	3 1/4	8 3/8	8 7/8	9	2 1/4
STD.	48	3/4	1 1/4	7D	4 3/4	4 1/2	11 1/8	12 1/8	12 5/8	3

DIMENSIONS (INCHES)							
A	B	C	D	E	F	G	H
5D	10 3/8	10 3/8	11 5/8	11 1/4	11 1/4	9 1/2	10 7/8
7D	14 1/4	15 1/8	14 7/8	15 3/4	15 3/4	13 1/16	15 1/2

( ALL DIMENSIONS SHOWN IN INCHES )



**TYPICAL APPROACH SIGNING**

(SIGNS NOT SHOWN FOR OPPOSITE DIRECTION)  
ALL DISTANCES ARE DESIRABLE MINIMUMS. FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.  
ALL W20-1 SIGNS SHALL BE ASTM TYPE VIII FLUORESCENT ORANGE SHEETING.

**NOTES**

THE SIGNS SHOWN ON THIS SHEET ARE INTENDED FOR USE IN PROVIDING ADVANCE WARNING AND INFORMATION ON CONSTRUCTION PROJECTS OVER WHICH TRAFFIC WILL BE MAINTAINED. WHEN ADDITIONAL APPROACH SIGNS OR OTHER TYPES OF ADVANCE SIGNING OR CONTROL ARE NECESSARY, THE PLANS AND/OR THE SPECIFICATIONS FOR THAT PROJECT WILL GIVE THE DETAILS OF THE SIGNS AND DEVICES REQUIRED. FOR ON-PROJECT CONSTRUCTION SIGNS, REFER TO APPROPRIATE STANDARD SHEETS.

**APPLICATION OF STANDARDS**

SINCE IT IS NOT POSSIBLE TO PRESCRIBE DETAILED STANDARDS OF APPLICATION FOR ALL OF THE SITUATIONS THAT MAY CONCEIVABLY ARISE ON A CONSTRUCTION PROJECT, REFERENCE SHALL BE MADE TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR THE PRINCIPLES, PROCEDURES, AND STANDARDS THAT WILL BE REQUIRED IN CONNECTION WITH ADVANCED WARNING AND ON-PROJECT CONSTRUCTION SIGNS AND BARRICADES. THE SIGNS SHOWN IN E-101 AND E-102 REPRESENT A SAMPLE OF THOSE MORE COMMONLY USED.

**LOCATION**

THE SIGNS SHALL BE LOCATED AS DETAILED ON THIS SHEET OR AS OTHERWISE SHOWN ON THE PLANS. THEY SHALL APPEAR AT EACH END OF THE HIGHWAY UNDER CONSTRUCTION AND ON ALL INTERSECTING PUBLIC HIGHWAYS. THE ENGINEER SHALL DETERMINE THE EXACT LOCATIONS.

**DESIGN**

LETTERS, DIGITS, ARROWS, SPACING AND TEXT DIMENSIONS SHALL CONFORM WITH THE "STANDARD HIGHWAY SIGNS BOOK" AND DESIGNS PRESCRIBED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) ADOPTED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION (FHWA).

**MATERIALS**

THE SIGN BASE MATERIAL USED FOR THE SIGNS ON THIS SHEET MAY BE ANY OF THE FOLLOWING, WITH MINIMUM THICKNESS AS NOTED.  
FLAT SHEET ALUMINUM 0.125 INCHES  
HIGH DENSITY OVERLAYED PLYWOOD 5/8 INCHES

**REFLECTORIZATION**

ALL LEAD SIGNS (W20-1) ON THIS SHEET SHALL BE ASTM TYPE VIII FLUORESCENT ORANGE SHEETING. ALL OTHER SIGNS ON THIS SHEET SHALL BE ASTM TYPE III RETROREFLECTORIZED SHEETING.

**COLORS**

THE COLORS SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA. COLORS SHOWN ON THIS SHEET CONSIST OF BLACK TEXT AND BORDER ON A RETROREFLECTORIZED ASTM TYPE III OR TYPE VIII ORANGE BACKGROUND.

**INSTALLATION**

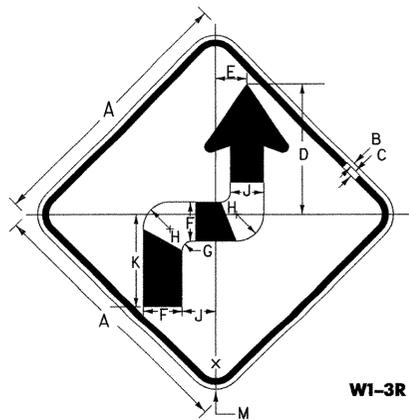
THE SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY, OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER ON POSTS SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST 7 FEET ABOVE THE EDGE OF PAVEMENT, AND THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST 6 FEET OUTSIDE THE SHOULDER POINT, 4 FEET OUTSIDE GUARD RAIL, OR 2 FEET OUTSIDE CURBING, OR SIDEWALK. THE INSTALLATION OF SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER, IN URBAN AREAS, THE BOTTOM OF THE SIGN SHALL BE AT LEAST 7 FEET ABOVE THE SIDEWALK. SIGNS MAY BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.

**REVISIONS AND CORRECTIONS**

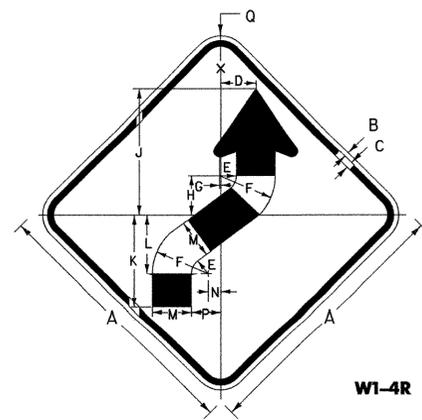
- MAY 26, 1989 - DATE OF ORIGINAL ISSUE
- OCT 21, 1992 - REVISED WOOD POST REQUIREMENTS, ADDED SIGN DETAILS, & REVISED TITLE BLOCK
- AUG. 08, 1995 - MINOR NOTE REVISIONS
- JAN. 06, 1997 - MINOR NOTE AND DIMENSION REVISIONS
- JAN. 2, 2004 - CHANGED REFLECTIVE SHEETING TO ASTM TYPE III OR TYPE VIII

APPROVED  
*[Signature]*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*[Signature]*  
TRAFFIC OPERATIONS ENGINEER  
*[Signature]*  
FEDERAL HIGHWAY ADMINISTRATION

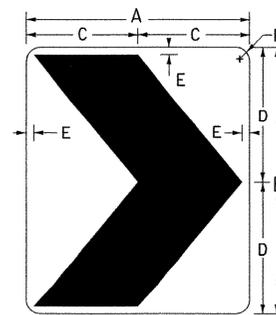
**CONSTRUCTION APPROACH  
SIGNS**



W1-3R

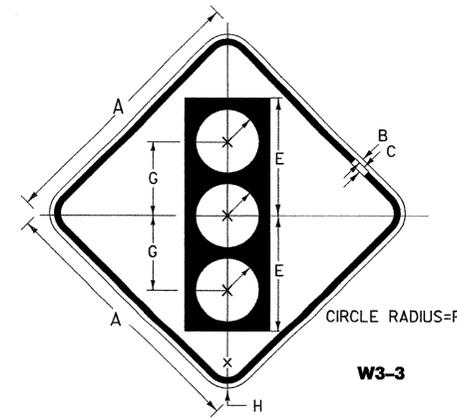


W1-4R



W1-8

SIGN	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
STD.	18	24	9	12	3/4	1 1/2
SPECIAL	24	30	12	15	7/8	1 7/8
EXPWY.	30	36	15	18	1	2 1/8
FRWY.	36	48	18	24	1 1/8	2 1/4

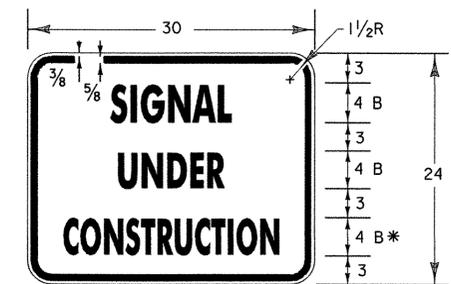


W3-3

SIGN	DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G	H
STD. & MIN.	36	5/8	7/8	5 3/4	15 3/4	4 1/4	10	2 1/4
SPECIAL	48	3/4	1 1/4	7 1/2	20	5	12 1/2	3

**COLORS**

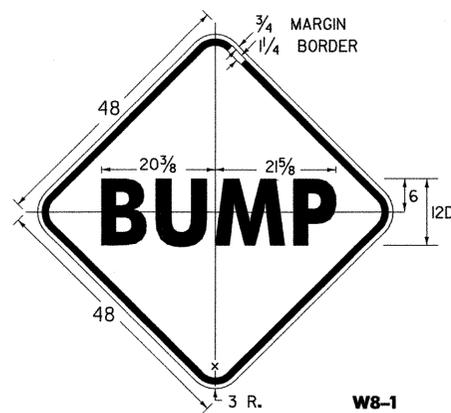
SYMBOL & LEGEND - BLACK (NON-REFL)  
BACKGROUND - ORANGE (REFL)  
TOP CIRCLE - RED (REFL)  
MIDDLE CIRCLE - YELLOW (REFL)  
BOTTOM CIRCLE - GREEN (REFL)



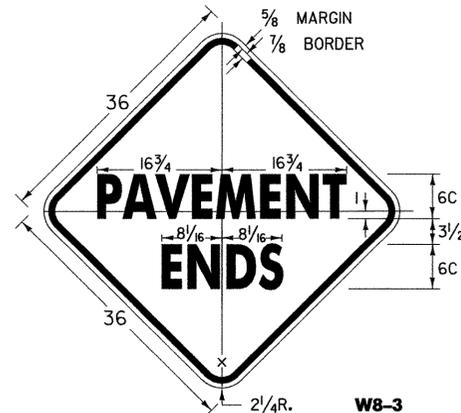
\* REDUCE SPACING 50%

SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	
STD. & MIN.	36	5/8	7/8	17 1/16	4 1/32	5 1/4	1 1/4	3 5/8	4 1/2	12 5/32	1 7/32	2 1/4	
SPECIAL	48	3/4	1 1/4	23 3/16	5 5/8	7	1 5/8	4 7/8	6	16 5/8	2 3/16	3	

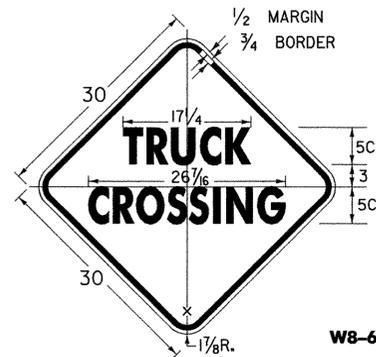
SIGN	DIMENSIONS (INCHES)															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	
STD. & MIN.	36	5/8	7/8	4 2/32	2 1/4	7 1/2	5 3/2	5 1/4	16 7/8	12 3/8	7 7/8	5 1/4	1 1/16	3 15/16	2 1/4	
SPECIAL	48	3/4	1 1/4	6 5/16	3	10	3 1/6	7	22 1/2	16 1/2	10 1/2	7	2 1/4	5 1/4	3	



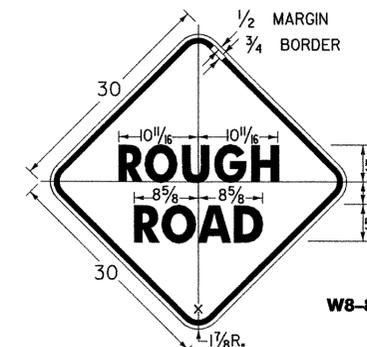
W8-1



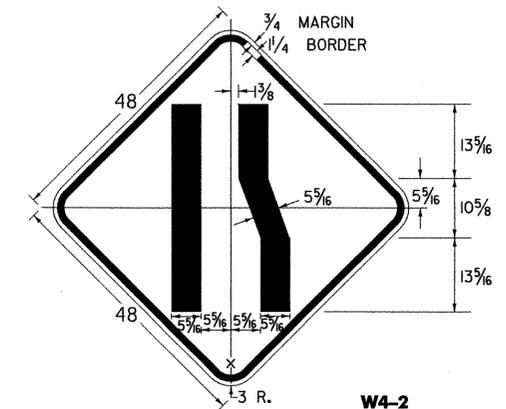
W8-3



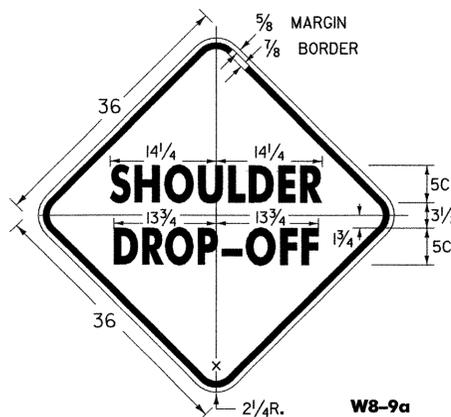
W8-6



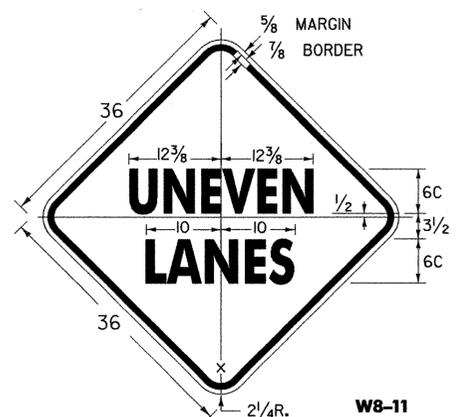
W8-8



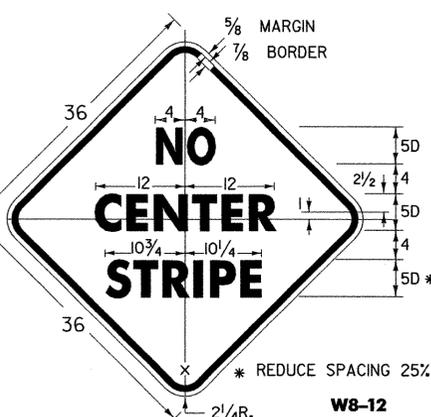
W4-2



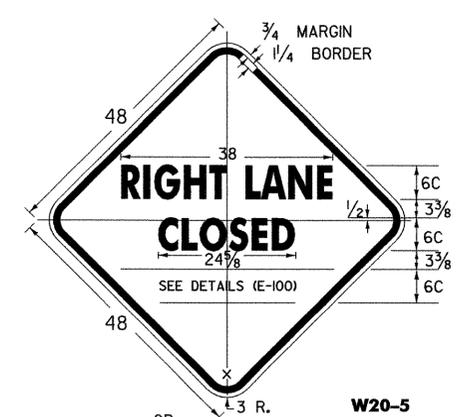
W8-9a



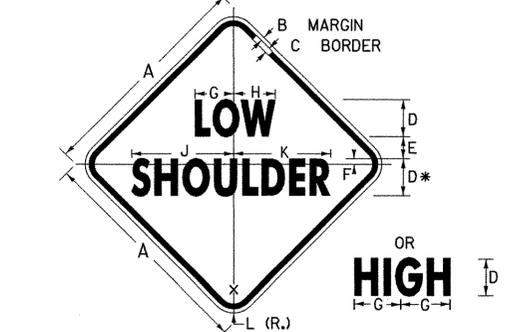
W8-11



W8-12



W20-5



W8-9

SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	L
STD.	30	1/2	3/4	5 C	3	3/4	5 5/8	5 5/8	13 11/16	13 1/16	1 7/8
FWY.	48	3/4	1 1/4	8 C	5	1 1/4	8 1/4	9	21 5/8	20 3/8	3

\* REDUCE SPACING 25%

**NOTES**

SEE STANDARD SHEET E-100 FOR NOTES AND TEXT DETAILS  
COLORS FOR SIGNS SHOWN ON THIS SHEET SHALL BE BLACK TEXT,  
BORDER AND SYMBOLS ON ASTM TYPE III OR TYPE VI  
RETROREFLECTORIZED ORANGE BACKGROUND, UNLESS OTHERWISE NOTED.

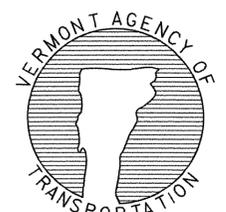
(ALL DIMENSIONS SHOWN IN INCHES) LEFT LANE

OTHER STDS. E-100  
REQUIRED:

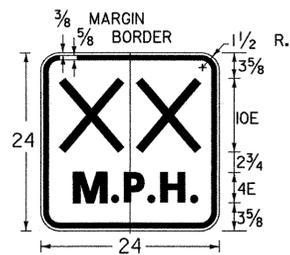
REVISIONS AND CORRECTIONS  
OCT. 30, 1987 - DATE OF ORIGINAL ISSUE  
OCT. 21, 1992 - ADDED ADDITIONAL SIGN DIMENSIONS,  
REVISED CHEVRON BACKGROUND TO ORANGE,  
& REVISED TITLE BLOCK  
AUG. 08, 1995 - ADDED AND DELETED VARIOUS  
SIGN DETAILS  
MAR., 10 1997 - REVISED SIGN DETAILS  
MAY 30, 2003 - CHANGED REFLECTIVE SHEETING TO ASTM  
TYPE III OR TYPE VI

APPROVED  
*John H. Kell*  
DIRECTOR OF PROGRAM DEVELOPMENT  
TRAFFIC OPERATIONS ENGINEER  
*Michael*  
FEDERAL HIGHWAY ADMINISTRATION

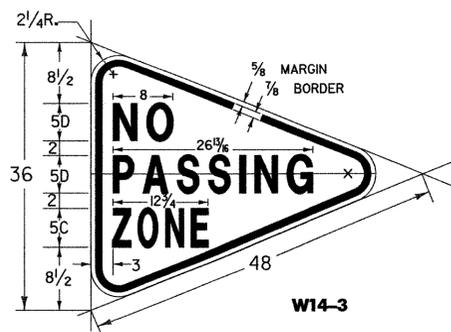
CONSTRUCTION SIGN  
DETAILS



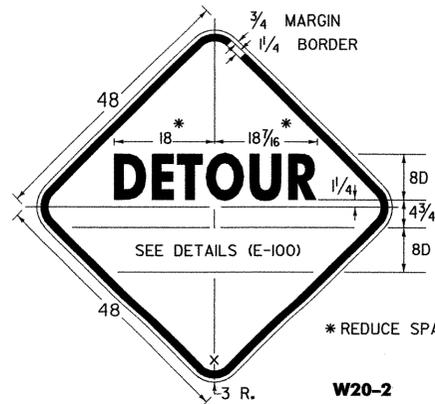
STANDARD  
E-101



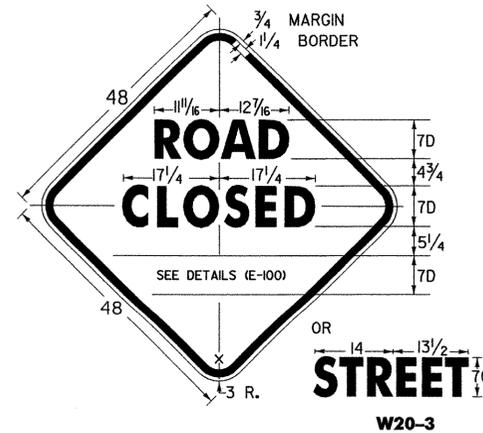
W13-1  
\*XX\* DENOTES ADVISORY SPEED AS SHOWN ON THE PLANS



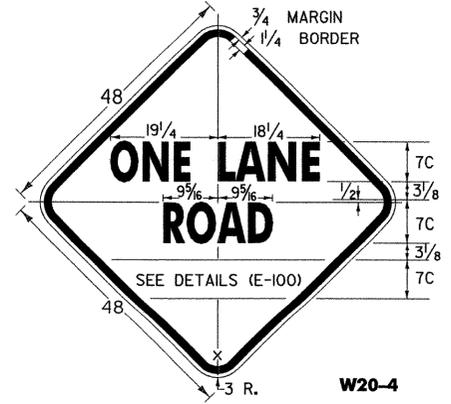
W14-3



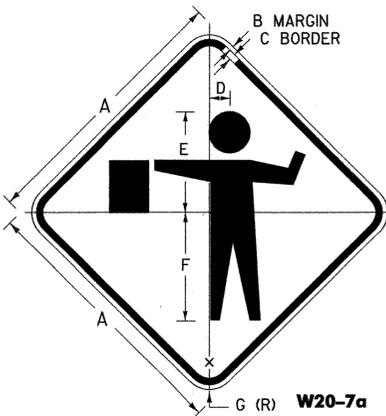
W20-2



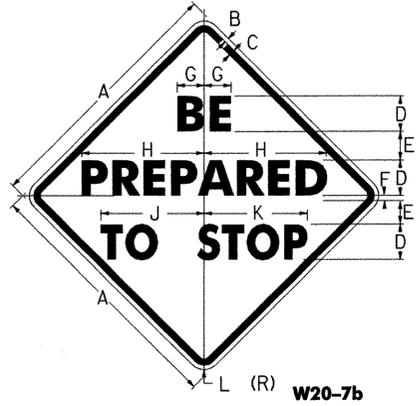
W20-3



W20-4



W20-7a

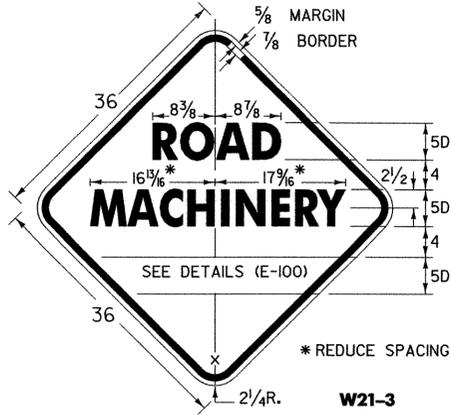


W20-7b

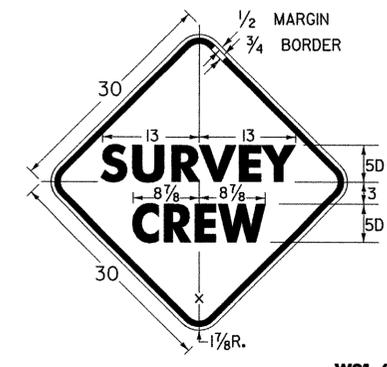
COLORS:  
BLACK BORDER AND TEXT (NON RETRORFL.)  
ORANGE BACKGROUND (RETRORFL.)

W3-4

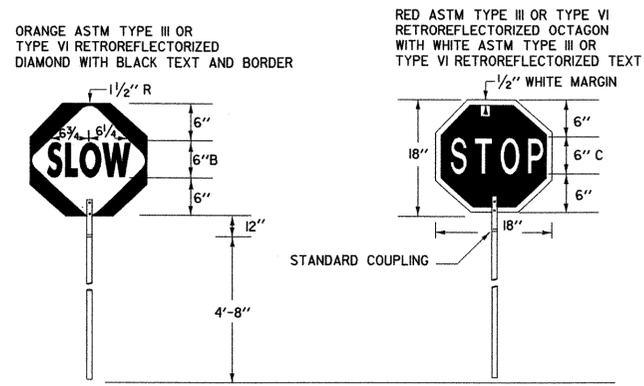
COLORS:  
BLACK BORDER AND TEXT (NON RETRORFL.)  
YELLOW BACKGROUND (RETRORFL.)



W21-3



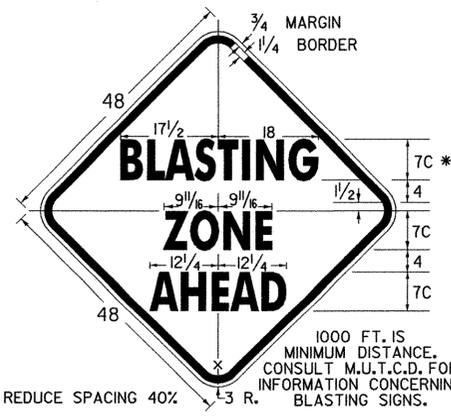
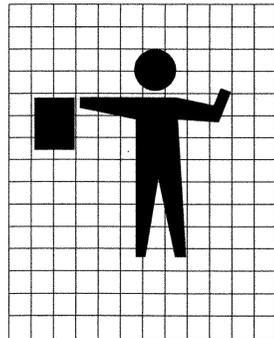
W21-6



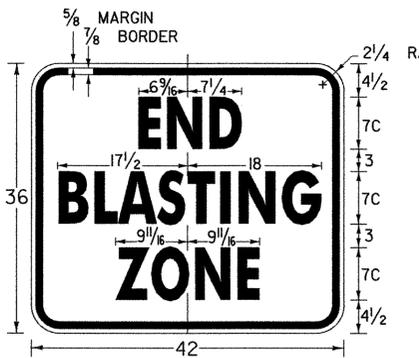
SIGN PADDLE FOR FLAGPERSON

SIGN	DIMENSIONS (INCHES)						
	A	B	C	D	E	F	G
STD.	36	5/8	7/8	2 3/4	13 1/2	14 5/8	2 1/4
FWY.	48	3/4	1 1/4	3 3/4	18	19 1/2	3

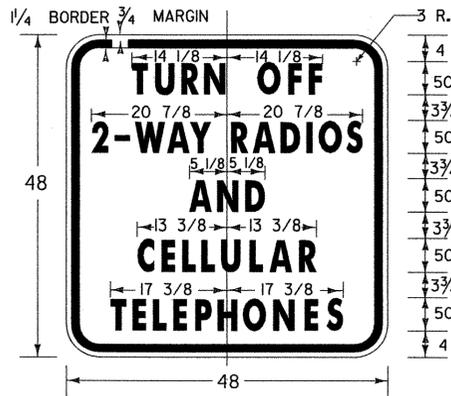
SIGN	DIMENSIONS ( INCHES )											
	A	B	C	D	E	F	G	H	J	K	L	
MIN.	36	5/8	7/8	6C	3 3/8	7/8	3 3/4	16 3/8	13	13 3/8	2 1/4	
STD.	48	3/4	1 1/4	8C	4 7/8	1 1/4	5	21 7/8	17 3/8	18 1/2	3	
EXPWY.	60	3/4	1 1/4	9C	5 3/8	1 3/8	5 5/8	24 3/4	19 3/8	20 1/4	3	



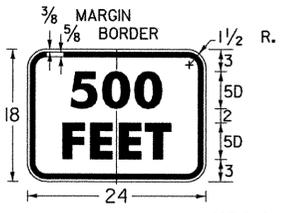
W22-1



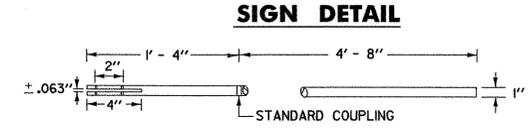
W22-3



VW22-1



W16-2a



SIGN DETAIL

STAFF DETAIL

MATERIALS  
THE SIGN MATERIALS SHALL BE 0.063" ALUMINUM WITH COLORS AS INDICATED ON DETAILS.  
THE STAFF SHALL BE 3/4" TO 1 1/4" DIAMETER RIGID ALUMINUM CONDUIT/TUBING WITH A WALL THICKNESS OF 0.125", OR 1" TO 1 1/2" DIAMETER RIGID PVC CONDUIT/TUBING WITH 0.125" WALL THICKNESS  
MOUNTING  
THE STAFF SHALL BE MOUNTED WITH EITHER TWO 1/4" DIAMETER ALUMINUM BOLTS OR TWO 1/4" DIAMETER ALUMINUM RIVETS.

NOTES

SEE STANDARD SHEET E-100 FOR NOTES AND TEXT DETAILS  
COLORS FOR SIGNS SHOWN ON THIS SHEET SHALL BE BLACK TEXT, BORDER AND SYMBOLS ON ASTM TYPE III OR TYPE VI RETROREFLECTORIZED ORANGE BACKGROUND, UNLESS OTHERWISE NOTED  
SIGN DETAILS INDICATE THE APPROPRIATE COLOR.

OTHER STDS. E-100  
REQUIRED:  
NOTE: ALL DIMENSIONS SHOWN IN INCHES EXCEPT WHERE NOTED

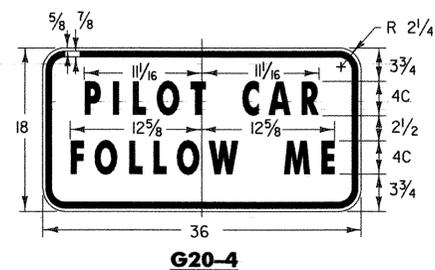
REVISIONS AND CORRECTIONS  
OCT. 30, 1987 - DATE OF ORIGINAL ISSUE  
JAN. 23, 1989 - DELETE MOTORCYCLE SYMBOL SIGN AND SPEED SIGN, ADDED TWO SIGNS  
OCT. 21, 1992 - ADDED A SIGN, REVISED A SIGN DIMENSION & TYPE ERROR & REVISED TITLE BLOCK  
AUG. 08, 1995 - ADDED FLAGGER GRID  
JUNE 30, 2003 - CHANGED REFLECTIVE SHEETING TO ASTM TYPE III OR TYPE VI CHANGED TEXT ON W20-7b SIGN

APPROVED  
*[Signature]*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*[Signature]*  
TRAFFIC OPERATIONS ENGINEER  
*[Signature]*  
FEDERAL HIGHWAY ADMINISTRATION

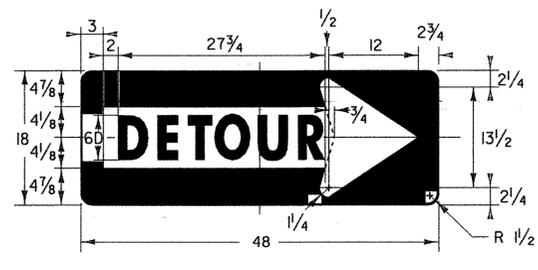
CONSTRUCTION SIGN  
DETAILS



STANDARD  
E-102



**G20-4**

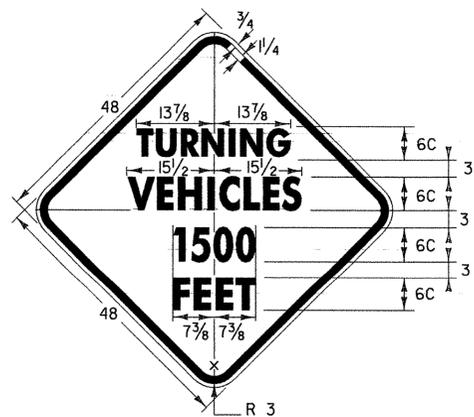


**M4-10(R)**

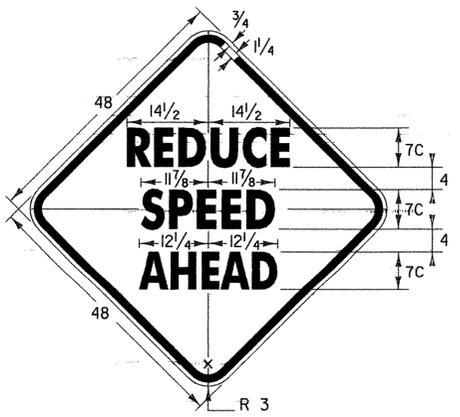


**R11-2**

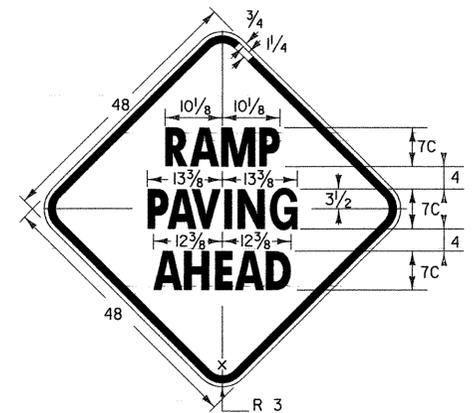
COLORS:  
BLACK TEXT AND BORDER  
WHITE RETROREFLECTORIZED BACKGROUND



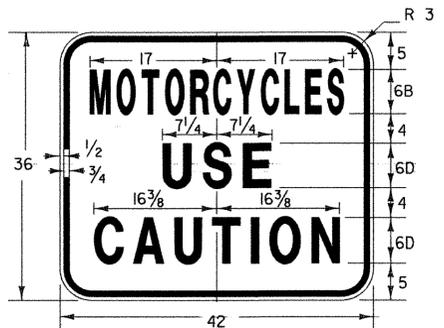
**VC-001**



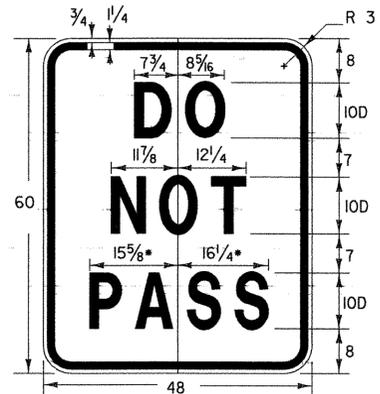
**VC-002**



**VC-003**

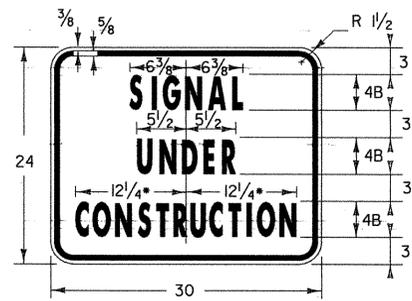


**VC-004**



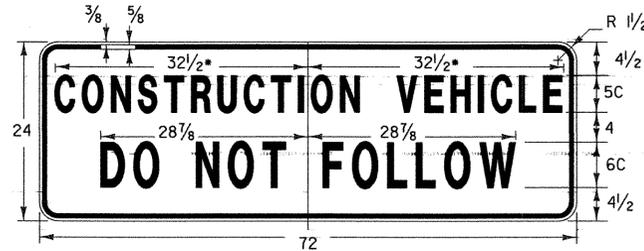
**VC-005**

\* REDUCE SPACING BY 40%



**VC-820**

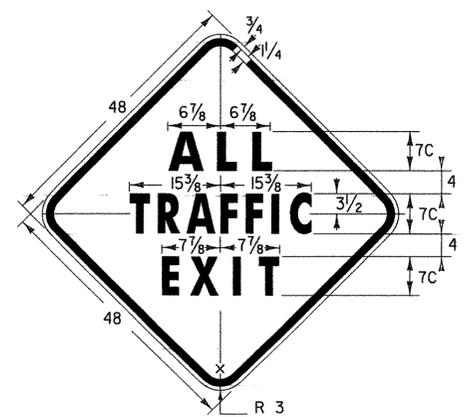
\* REDUCE SPACING 25%



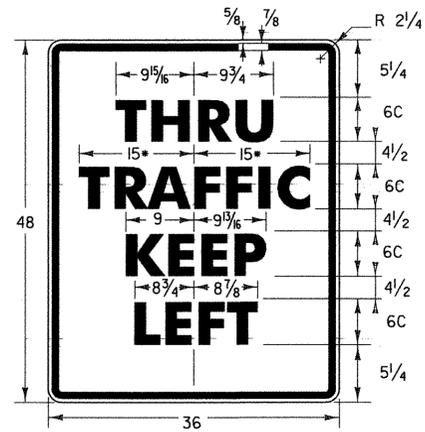
**VC-007**

\* REDUCE SPACING 20%

IT IS SUGGESTED THAT THIS SIGN BE DESIGNED TO FOLD, (DOWN OR ACROSS), BE COVERED, OR BE REMOVED WHEN NOT IN USE. THE SIGN SHOULD ALSO BE MOUNTED AS TO NOT INTERFERE WITH THE VISIBILITY OF DIRECTIONAL OR TAIL LIGHTS AS REQUIRED BY LAW.



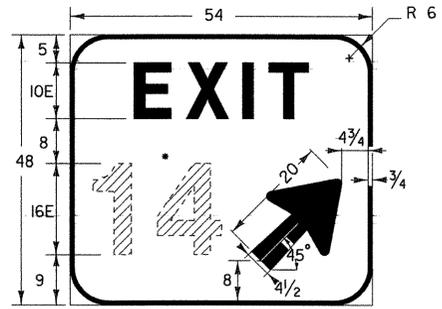
**VC-008**



**VR-118L**

\* REDUCE SPACING 25 %

COLORS:  
BLACK TEXT AND BORDER  
WHITE (RETROREFLECTORIZED) BACKGROUND



**E5-1a**

\* EXIT NUMBER AS PER PLANS OPTICALLY SPACED  
COLORS:  
WHITE RETROREFLECTORIZED BORDER, ARROW AND LEGEND  
GREEN RETROREFLECTORIZED BACKGROUND

(ALL DIMENSIONS SHOWN IN INCHES EXCEPT WHERE NOTED)

**NOTES**

SEE STANDARD SHEET E-100 FOR NOTES AND TEXT DETAILS  
COLORS FOR SIGNS SHOWN ON THIS SHEET SHALL BE BLACK TEXT, BORDER AND SYMBOLS ON ASTM TYPE III OR TYPE VIII RETROREFLECTIVE ORANGE BACKGROUND, UNLESS OTHERWISE NOTED.  
SIGN DETAILS INDICATE THE PROPER COLOR.

**OTHER STDS. E-100, E-151 REQUIRED:**

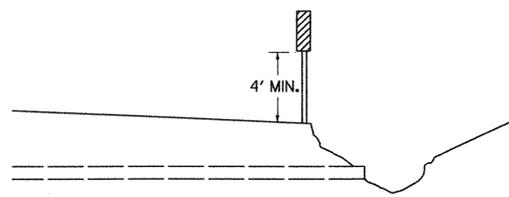
REVISIONS AND CORRECTIONS  
AUG 08, 1995 - DATE OF ORIGINAL ISSUE  
MAY 01, 2004 - CHANGED REFLECTIVE SHEETING TO TYPE III

APPROVED  
DIRECTOR OF PROGRAM DEVELOPMENT  
TRAFFIC OPERATIONS ENGINEER  
FEDERAL HIGHWAY ADMINISTRATION

CONSTRUCTION SIGN  
DETAILS



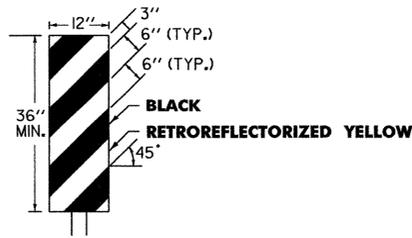
STANDARD  
E-102A



**DELINEATOR TYPICAL**

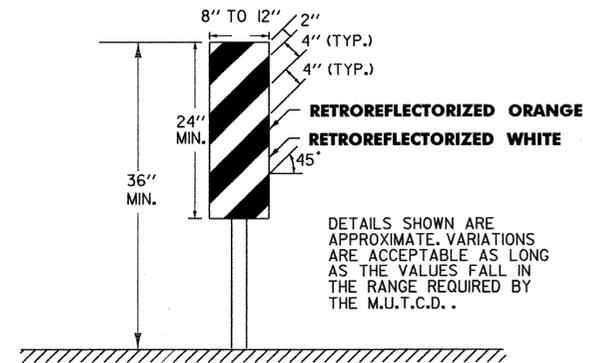
THE STANDARD COLOR FOR DELINEATORS USED ALONG BOTH SIDES OF TWO-WAY STREETS AND HIGHWAYS AND THE RIGHT SIDE OF ONE-WAY STREETS SHALL BE WHITE. DELINEATORS USED ALONG THE LEFT SIDE OF ONE-WAY ROADWAYS SHALL BE YELLOW THEY SHALL HAVE A MINIMUM AREA OF 7 SQUARE INCHES. THEY MAY BE ROUND, SQUARE OR OBLONG, FOR ALTERNATES SEE STD. E-198

SYMBOL



**OBJECT MARKER TYPICAL**

OBJECTS MARKERS ARE USED TO MARK OBSTRUCTIONS WITHIN OR ADJACENT TO THE ROADWAY. IN SOME CASES THERE MAY NOT BE A PHYSICAL OBJECT INVOLVED, BUT OTHER ROADSIDE CONDITIONS SUCH AS NARROW SHOULDER DROP-OFFS, GORES, D.I. EXCAVATIONS, AND ABRUPT CHANGES IN THE ROADWAY ALIGNMENT MAY MAKE IT UNDESIRABLE FOR A DRIVER TO LEAVE THE ROADWAY. THE INSIDE EDGE OF THE OBJECT MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION, WHENEVER POSSIBLE. OBJECT MARKERS SHALL HAVE ALTERNATING BLACK AND RETROREFLECTORIZED YELLOW STRIPES. (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS).



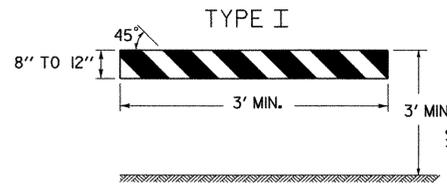
**VERTICAL PANEL**

VERTICAL PANELS SHALL HAVE ALTERNATING ORANGE AND WHITE RETROREFLECTORIZED STRIPES (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS). THESE DEVICES MAY BE USED FOR TRAFFIC SEPARATION, CHANNELIZING OR BARRICADING WHERE SPACE IS AT A MINIMUM.

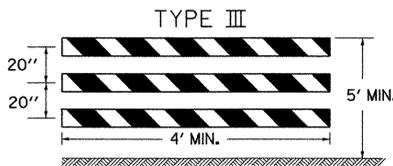
DETAILS SHOWN ARE APPROXIMATE. VARIATIONS ARE ACCEPTABLE AS LONG AS THE VALUES FALL IN THE RANGE REQUIRED BY THE M.U.T.C.D..

**DELINEATOR, VERTICAL PANEL AND OBJECT MARKER DETAILS FOR CONSTRUCTION AREAS WHERE TRAFFIC IS MAINTAINED**

ALL SIGN PLACEMENT DISTANCES ARE DESIRABLE SPECIFICATIONS. FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT. PROJECT CONSTRUCTION APPROACH SIGNING PLACEMENT SHALL TAKE INTO CONSIDERATION SPACING REQUIREMENTS FOR THE DETOUR SIGN LAYOUT REQUIREMENTS.



STRIPING IS SHOWN WITH TRAFFIC PASSING TO THE RIGHT.



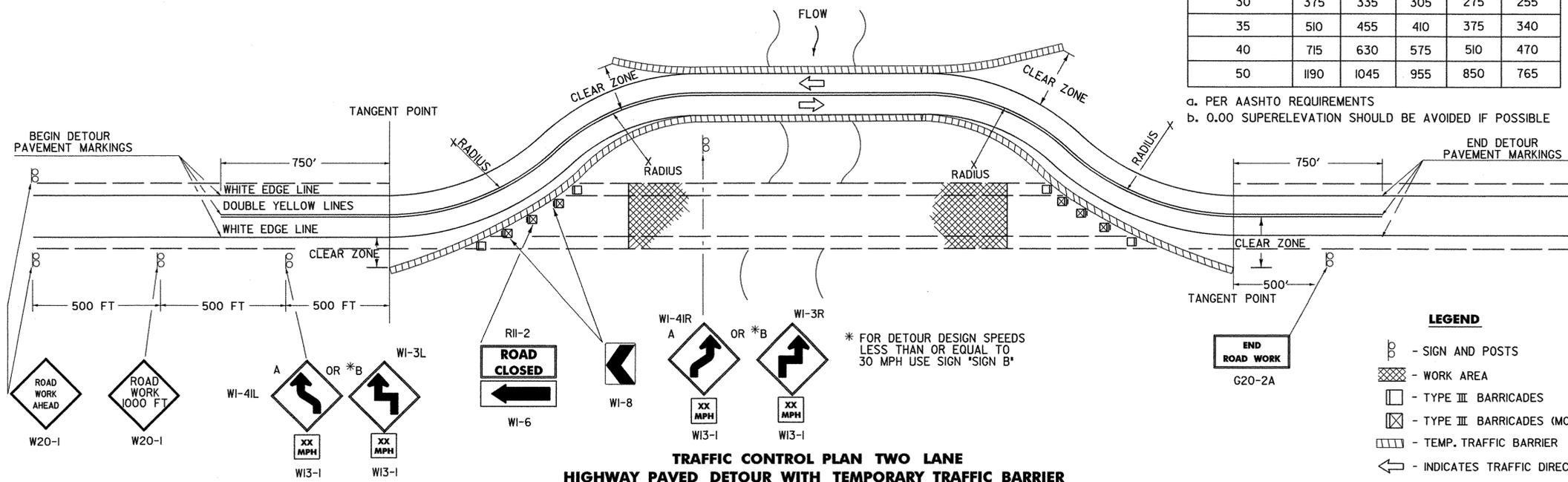
A TYPE III (MODIFIED) BARRICADE SHALL CONSIST OF TYPE II RAILS MOUNTED ON A BREAKAWAY BARRICADE AS SHOWN ON STANDARD SHEET E-107A.

BARRICADE CHARACTERISTICS			
	I	II	III
WIDTH OF RAIL	8" MIN. 12" MAX.	8" MIN. 12" MAX.	8" MIN. 12" MAX.
LENGTH OF RAIL	3' MIN.	3' MIN.	4' MIN.
WIDTH OF STRIPES	6"	6"	6"
HEIGHT	3' MIN.	3' MIN.	5' MIN.
TYPE OF FRAME	SEE E-107A	SEE E-107A	SEE E-107A
FLEXIBILITY	PORTABLE	PORTABLE	PORTABLE
ANGLE OF STRIPE	45°	45°	45°
COLOR OF STRIPES	ORANGE AND WHITE	ORANGE AND WHITE	ORANGE AND WHITE

**BARRICADE CHARACTERISTICS**

DETOUR DESIGN SPEED (M.P.H.)	MINIMUM RADIUS (FT.) <sup>a</sup>				
	SUPERELEVATION (FT./FT.)				
	0.00 <sup>b</sup>	0.02	0.04	0.06	0.08
20	160	140	130	120	110
25	245	220	200	185	170
30	375	335	305	275	255
35	510	455	410	375	340
40	715	630	575	510	470
50	1190	1045	955	850	765

a. PER AASHTO REQUIREMENTS  
b. 0.00 SUPERELEVATION SHOULD BE AVOIDED IF POSSIBLE



**TRAFFIC CONTROL PLAN TWO LANE HIGHWAY PAVED DETOUR WITH TEMPORARY TRAFFIC BARRIER**

**LEGEND**

- ⊢ - SIGN AND POSTS
- ▨ - WORK AREA
- - TYPE III BARRICADES
- ▣ - TYPE III BARRICADES (MOD.)
- ▤ - TEMP. TRAFFIC BARRIER
- ← - INDICATES TRAFFIC DIRECTION

**BARRICADES**

**APPLICATION NOTES**

TYPE I BARRICADES SHALL BE USED ON CONVENTIONAL ROADS OR URBAN STREETS AND ARTERIALS TO MARK A SPECIFIC HAZARD.

TYPE II BARRICADES SHALL BE USED ON EXPRESSWAYS AND FREEWAYS, SERVING THE SAME FUNCTIONS AS TYPE I BARRICADES.

TYPE III BARRICADES (SEE STD. E-107A) SHALL ONLY BE USED WHEN A ROAD SECTION OR LANE IS CLOSED TO TRAFFIC AND ARE TO BE ERRECTED AT THE POINT OF CLOSURE.

**MATERIALS**

THE BARRICADES SHOWN ON THIS SHEET SHOULD BE OF LIGHTWEIGHT MATERIAL. IF WOOD IS USED THE FOLLOWING CONDITIONS SHALL APPLY:

1. WOODEN BARRICADES (TYPE I AND II)
  - A) SHALL NOT BE USED TO CHANNELIZE OR DELINEATE WORK AREAS WITHIN THE CLEAR ZONE OF ANY HIGHWAY WHERE OPERATING SPEEDS IN EXCESS OF 20 M.P.H. ARE EXPECTED UNLESS INSTALLED FOR PEDESTRIAN CONTROL BEHIND APPROVED POSITIVE BARRIERS.
  - B) MAY BE USED WHERE OPERATING SPEEDS OF 20 M.P.H. OR LESS ARE EXPECTED.
2. TYPE III WOODEN BARRICADES SHALL NOT BE USED.

**COLORS**

THE BARRICADE PANELS SHOWN ON THIS SHEET SHALL HAVE ALTERNATING RETROREFLECTORIZED WHITE AND ORANGE STRIPES. THE ORANGE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND APPROVED BY THE US DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION. THE BARRICADE COMPONENTS SHALL BE WHITE UNLESS UNPAINTED METAL OR ALUMINUM IS USED.

**REFLECTORIZATION**

THE RETROREFLECTIVE SHEETING ON BARRICADE PANELS SHALL BE ASTM TYPE III.

**LOCATION**

THE BARRICADES SHOWN ON THIS SHEET WILL BE LOCATED BY THE RESIDENT ENGINEER IN THE FIELD OR AS SHOWN ON THE PLANS. THE LOCATION OF THE BARRICADES SHALL FOLLOW THE PROCEDURES SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", OR AS OTHERWISE NOTED.

**MAINTENANCE**

BARRICADES SHALL BE MAINTAINED IN CLEAN CONDITION, SATISFACTORY TO THE RESIDENT ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO THE APPROACHING TRAFFIC AT ALL TIMES. DAMAGED, DAFACED, OR DIRTY BARRICADES SHALL BE REPAIRED, CLEANED, OR REPLACED AS ORDERED BY THE RESIDENT ENGINEER.

**DETOUR NOTES**

- 1.) SIGNS AND DELINEATION SHOWN FOR ONE DIRECTION OF TRAFFIC ONLY.
- 2.) THE CONTRACTOR IS RESPONSIBLE FOR PAVEMENT MARKING AND SHALL REMOVE ANY CONFLICTING OR CONFUSING EXISTING MARKINGS.
- 3.) ADDITIONAL SIGNING MAY BE REQUIRED AT THE DISCRETION OF THE RESIDENT ENGINEER.
- 4.) UNPAVED DETOURS REQUIRE PAVEMENT MARKINGS FOR TRANSITIONS FROM EXISTING PAVEMENT.
- 5.) THE NUMBER OF CHANNELIZING DEVICES, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED SHALL BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR CURVE, ETC.).
- 6.) AASHTO CLEAR ZONE REQUIREMENTS SHOULD BE MET. IF NOT THEN AN APPROVED ENERGY ABSORPTION ATTENUATOR (SUITABLE FOR THE TEMPORARY TRAFFIC BARRIER USED AND FOR THE DESIGN SPEED) SHALL BE INSTALLED PER THE CURRENT AASHTO ROADSIDE DESIGN GUIDE.
- 7.) THE DETOUR DESIGN SPEED SHOULD BE NO LESS THAN 10 M.P.H. BELOW THE POSTED SPEED LIMIT, UNLESS PHYSICAL RESTRICTIONS PREVENT THIS.
- 8.) SEE STANDARD SHEETS E-100, E-101 AND E-102 FOR SIGN DETAIL AND MATERIAL REQUIREMENTS.
- 9.) IF THE USE OF TEMPORARY TRAFFIC BARRIER IS NOT REQUIRED, THEN REFLECTORIZED PLASTIC DRUMS SHALL BE USED.

<b>OTHER STDS. REQUIRED:</b>	<b>E-100</b>	<b>E-102</b>	<b>E-107a</b>
	<b>E-101</b>	<b>E-102a</b>	<b>E-198</b>

**REVISIONS AND CORRECTIONS**  
 SEPT. 10, 1987 - DATE OF ORIGINAL ISSUE  
 APRIL 29, 1988 - FHWA REVIEW COMMENTS  
 SEPT. 20, 1993 - NEW RADIUS CHART, BARRICADE ALIGNMENT AND USE OF TEMPORARY TRAFFIC BARRIER  
 AUG. 08, 1995 - REVISED SIGNING PER MUTCD  
 JUNE 30, 2003 - CHANGED REFLECTIVE SHEETING TO TYPE III

APPROVED  
 DIRECTOR OF PROGRAM DEVELOPMENT  
 TRAFFIC OPERATIONS ENGINEER  
 FEDERAL HIGHWAY ADMINISTRATION

**DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS**

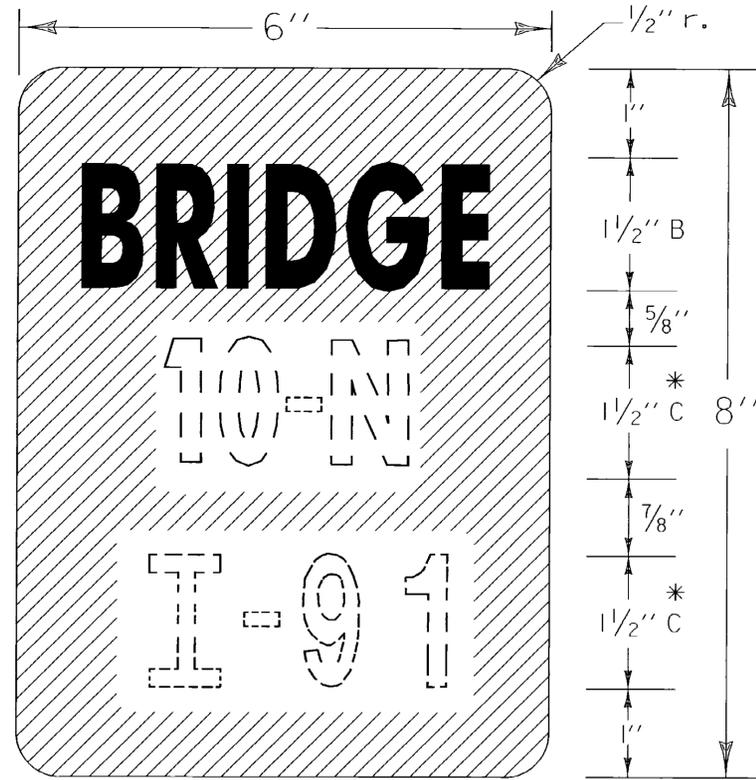
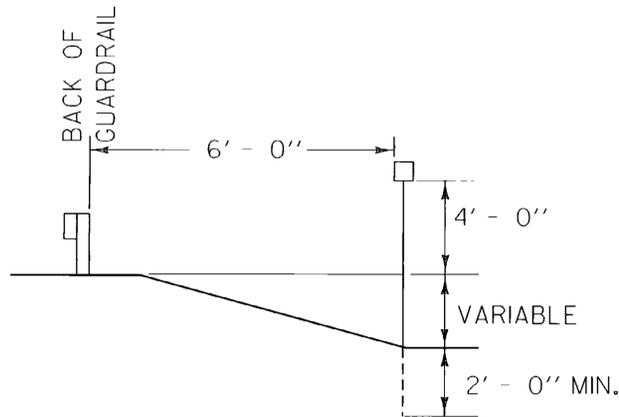
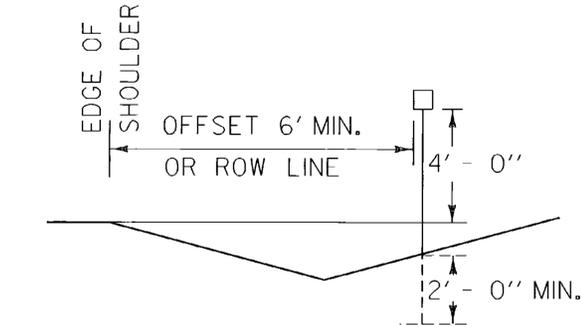


**STANDARD E-107**

I-91  
 ← 2" →

**HYPHENATED WORD DETAIL**

FOR EXAMPLE, ROUTE NUMBERS  
 SHALL APPEAR AS: I-91, US5, VT22



**VD-701**

\* OPTICALLY SPACE BRIDGE  
 AND ROUTE NUMBERS.  
 SERIES B LETTERS MAY  
 BE USED TO MAINTAIN  
 VISUAL INTEGRITY.

**NOTES:**

- GENERAL:  
 DOTTED LINES AND NUMERALS INDICATE TEXT THAT VARIES.
- PAYMENT:  
 BRIDGE PLAQUES SHALL BE PAID AS TRAFFIC SIGNS, TYPE "A",  
 AND POSTS PAID AS FLANGED CHANNEL STEEL SIGN POSTS.
- MATERIAL:  
 THE SIGN BASE MATERIAL SHALL BE 0.04" FLAT SHEET ALUMINUM.
- COLORS:  
 THE SIGN SHALL HAVE A REFLECTORIZED WHITE TEXT ON REFLECTORIZED  
 GREEN BACKGROUND. THE COLORS SHALL CONFORM WITH THOSE FOUND  
 IN STANDARD COLOR TOLERANCE CHARTS AS APPROVED BY THE U.S.  
 DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
- LETTERING:  
 LETTERS AND DIGITS SHALL CONFORM WITH THE STANDARD ALPHABETS  
 FOR HIGHWAY SIGNS AS PRINTED BY THE FEDERAL HIGHWAY ADMINISTRATION.
- POSTS:  
 FLANGED CHANNEL STEEL 2"/FT POSTS SHALL BE USED WHEN THE POST LENGTH  
 EXCEEDS 7 FEET. FOR LENGTH OF 7 FEET OR LESS, A 1.12"/FT STEEL SIGN POST  
 SHALL BE USED.

**OTHER STDS.  
 REQUIRED:**



STANDARD  
 E-134

**REVISIONS AND CORRECTIONS**

DEC. 17, 1989 - DATE OF ORIGINAL ISSUE  
 AUG. 08, 1995 - MISC NOTE REVISIONS

**APPROVED**

*Stephen J. MacArthur*  
 DIRECTOR OF ENGINEERING

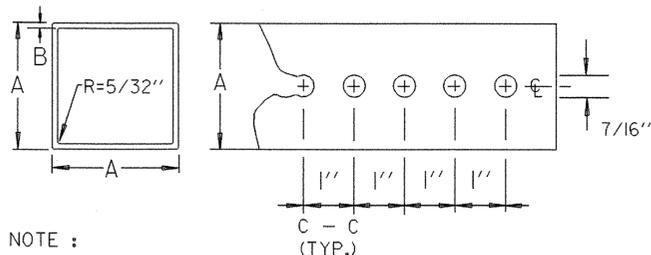
*David A. Ross*  
 TRAFFIC AND SAFETY ENGINEER

**BRIDGE NUMBER PLAQUE**

APPROVED FOR THIS PROJECT  
 AND/OR DESIGN IMPLEMENTATION.  
 FHWA FINAL APPROVAL PENDING.

GUARDRAIL DEFLECTION CHART (PER AASHTO - ROADSIDE DESIGN GUIDE - LATEST EDITION)		
TYPE	GR POST SPACING	DEFLECTION
THREE CABLE W/STEEL POSTS	16' - 0"	11" - 6"
W/WOODEN POSTS	12' - 6"	11" - 6"
W-BEAM W/STRONG POST	6' - 3"	3'
BOX BEAM	6' - 0"	5'
THRIE BEAM W/STRONG POST	6' - 3"	2'

THIS CHART LISTS THE THEORETICAL MAXIMUM DEFLECTION DISTANCE, UPON IMPACT, OF DIFFERENT TYPES OF GUARDRAIL AND VARIOUS POST SPACINGS.



NOTE :

THE POSTS SHALL BE CAREFULLY FORMED OF STEEL WITH A MINIMUM YIELD OF 55,000 PSI, INTO A SIZE AND SHAPE WITH CORNERS INDUCTION WELDED IN SUCH A MANNER THAT NEITHER FLASH NOR WELD SHALL INTERFERE WITH THE TELESCOPING PROPERTIES, NOR DAMAGE THE GALVANIZING.

\* THE WALL THICKNESS TOLERANCES SHALL BE +.005" AND -.010" FOR THE 12 GAUGE.

\* THE WALL THICKNESS TOLERANCES SHALL BE +.002" AND -.008" FOR THE 14 GAUGE.

### DIMENSION DETAILS AND POST SELECTION CHART

POST SELECTION CHART								
SIGN AREA (FT <sup>2</sup> ) X H (FT) ≤ SV (SELECTION VALUE)								
POST SIZE LBS./FT.	DIMENSIONS			SECTION MODULUS IN <sup>3</sup>	ONE POST S <sub>V</sub>	TWO POST S <sub>V</sub>	THREE POST S <sub>V</sub>	NUMBER PERMITTED IN 8' PATH
	A	*B	GAUGE					
1.88	1-3/4"	.083	14	0.230	46	92	138	TWO
2.42	2"	.083	12	0.380	77	154	231	TWO
3.35	2-1/2"	.105	12	0.642	130	260	390	ONE

DESIGN CRITERIA:

WIND SPEED = 70 MPH (10 -YEAR MEAN RECURRENCE INTERVAL)  
WIND PRESSURE = 19 PSF  
STEEL MINIMUM YIELD = 55,000 PSI  
ALLOWABLE STRESS = (1.4) 0.60 FY

REVISIONS AND CORRECTIONS  
APR. 27, 1994 - ORIGINAL APPROVAL DATE  
JUL. 21, 1994 - REVISED POST GAUGES  
AUG. 18, 1995 - ADDED TWO PIECE ANCHOR DETAIL  
MAR. 26, 1996 - REVISED POST SELECTION CHART  
MAY 20, 1999 - REPLACE LOST ORIGINAL  
JUN. 08, 2009 - POST SELECTION REVISIONS

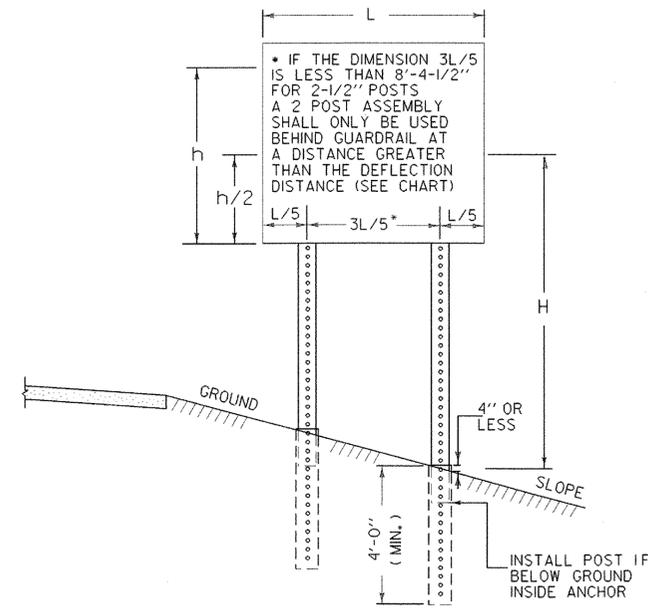
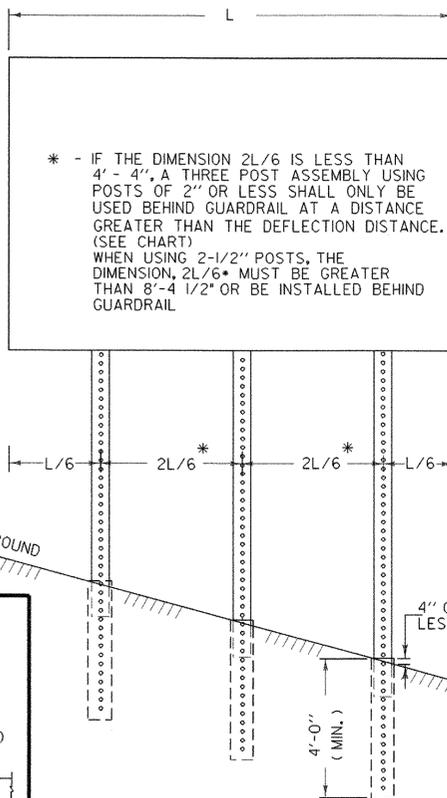
APPROVED

*Kevin S. Masbie*  
HIGHWAY, SAFETY & DESIGN ENGINEER  
*Richard J. Peterson*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*Mark B. Riedler*  
FEDERAL HIGHWAY ADMINISTRATION

# SQUARE STEEL SIGN POST

/traf/english/std/e164.dgn

### MULTI-POST INSTALLATIONS



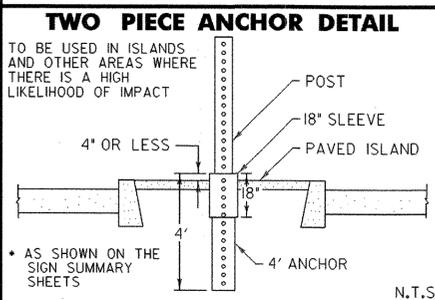
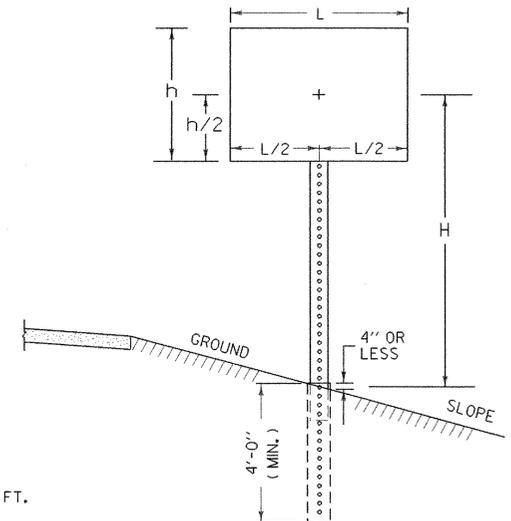
### POST SPACING DETAILS

### GENERAL NOTES

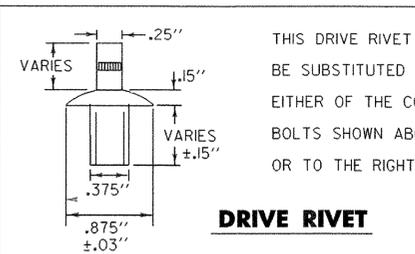
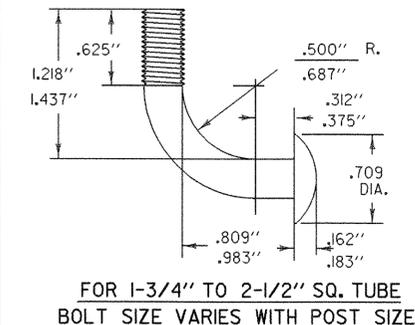
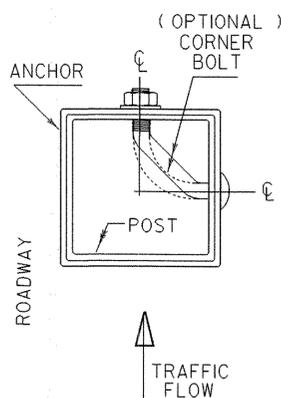
CONSTRUCTION METHODS - POSTS MAY BE DRIVEN OR SET IN A DUG HOLE AND BACKFILLED. IF DRIVEN, A DRIVING CAP SHALL BE USED. THE DUG HOLE INSTALLATION SHALL BE USED IN AREAS OF POOR SOIL CONDITIONS OR AS DIRECTED BY THE RESIDENT ENGINEER. BACKFILL SHALL BE COMPACTED AS DIRECTED BY THE RESIDENT ENGINEER.

SIGN CLEARANCES - HORIZONTAL AND VERTICAL SIGN CLEARANCES SHALL BE SHOWN ON THE PLANS OR THE APPROPRIATE STD. SHEETS.

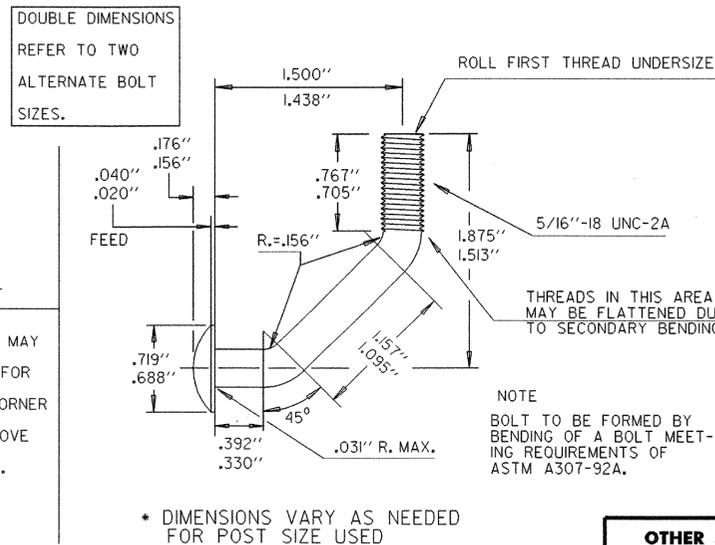
SINGLE POST INSTALLATIONS SHALL BE LIMITED TO A SIGN AREA OF 20 SQ. FT. OR LESS



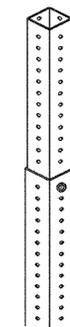
### TOP VIEW OF ANCHOR, POST AND BOLT



### OPTIONAL CORNER BOLT DETAILS



### CONNECTION DETAIL

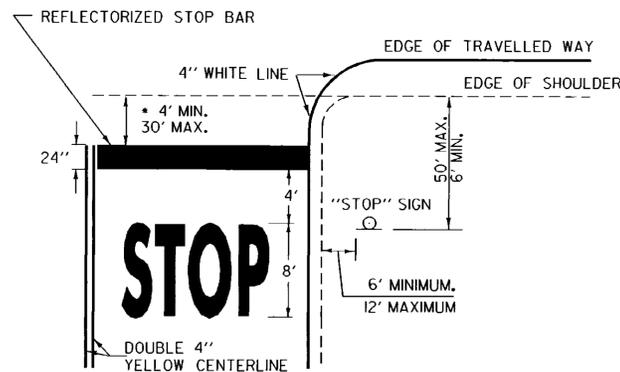


(SEE DETAIL LEFT FOR BOLT PLACEMENT)

OTHER STDS. REQUIRED E-120, E-160

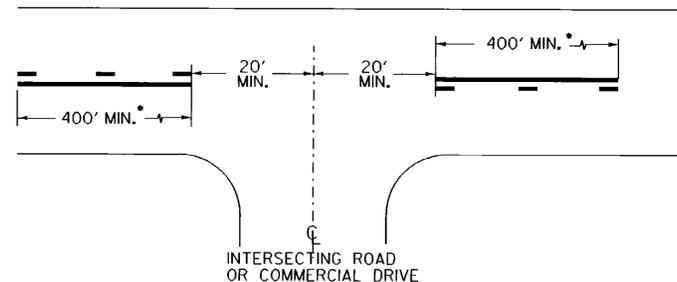


# STANDARD E-164



\* THE "DESIRED STOPPING POINT" IS THE LOCATION BASED ON SITE CONDITIONS THAT BEST ALLOWS THE STOPPED VEHICLE TO VIEW THE APPROACHING TRAFFIC.

**STOP BAR LAYOUT**

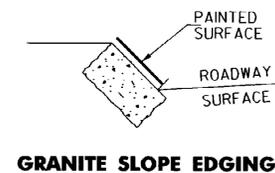


\* THE SOLID LINE SHALL BE PAIRED WITH EITHER A SOLID OR DASHED LINE DEPENDING ON SIGHT DISTANCE AVAILABILITY IN THE OPPOSING DIRECTION. ADJUSTMENTS TO THE 40 FOOT CENTERLINE OPENING MAY BE MADE TO ACCOMMODATE SKEWED INTERSECTIONS.

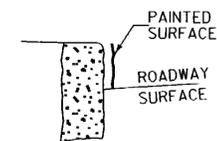
CENTERLINE BREAKS:

- A. AT ALL STATE HIGHWAYS AND TOWN HIGHWAYS, INCLUDING CLASS 4 TH'S, THAT HAVE STOP AND LEGAL LOAD LIMIT SIGNS INSTALLED
- B. COMMERCIAL DRIVES:
  1. WHERE A SEPERATE TURN LANE EXISTS ON THE MAIN LINE (LT. OR RT.)
  2. SIGNIFICANT TRAFFIC VOLUMES EXISTS.
  3. IF MOTORISTS NEED ASSISTANCE TO DEFINE ENTRANCE POINTS.

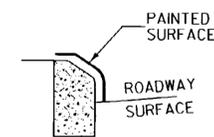
**CENTERLINE LAYOUT**



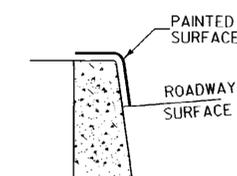
**GRANITE SLOPE EDGING**



**VERTICAL GRANITE CURB**

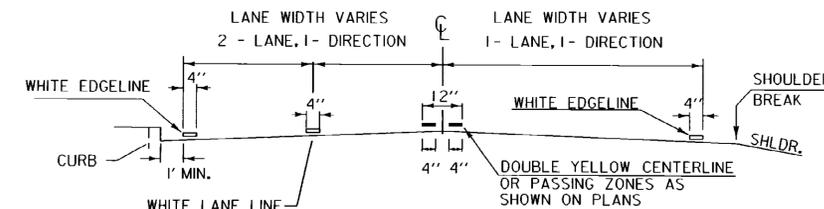


**TYPE A (CONCRETE)**

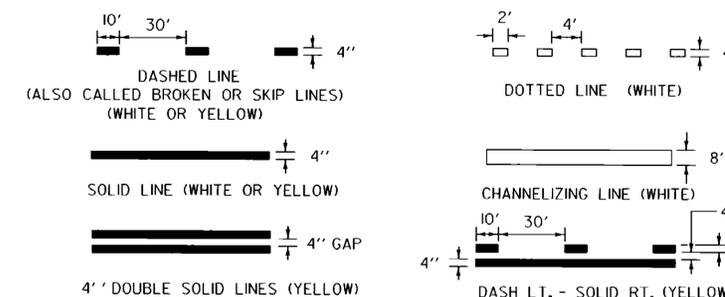


**TYPE B (CONCRETE)**

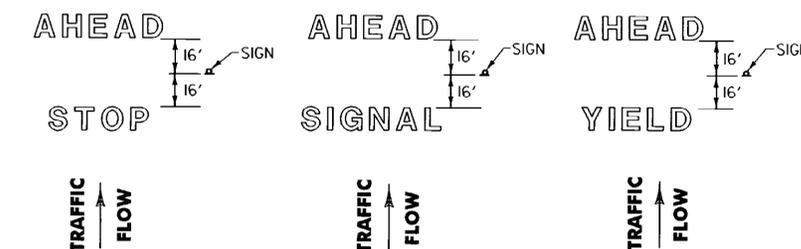
**PAINTED CURB**



**PAVEMENT MARKING PLACEMENT DETAIL**

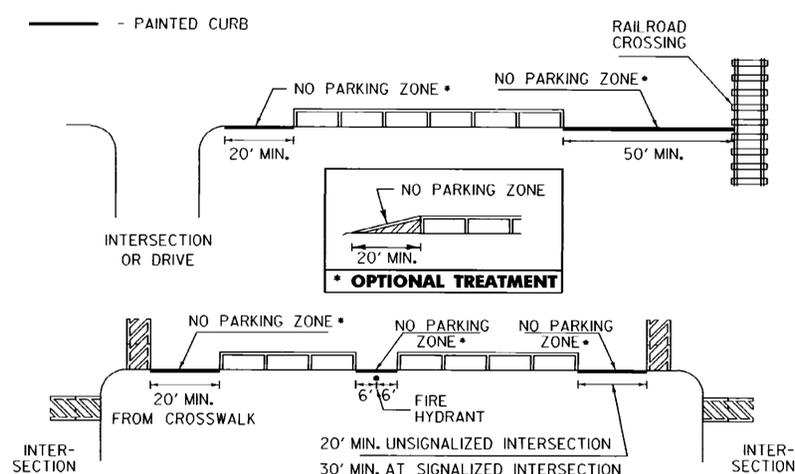


**PAVEMENT MARKING LINE DETAILS**

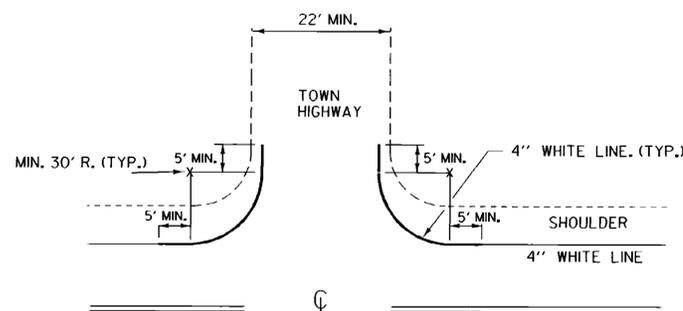


**LETTER IN WORD MARKING SPACING DETAIL**

NOTE: SINGLE WORDS CENTERED ON SIGN ie: SCHOOL OR YIELD



**NO PARKING LAYOUT DETAILS**

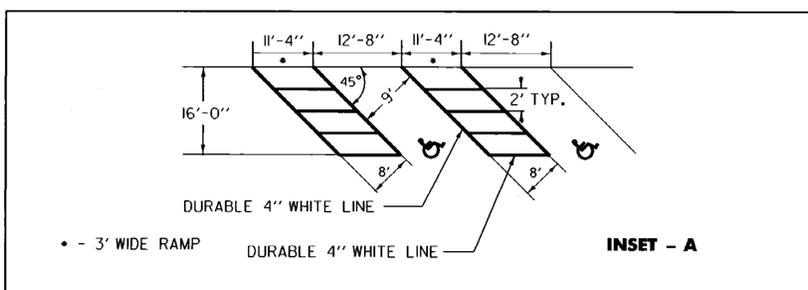


EDGE LINES SHALL BE APPLIED TO ALL STATE HIGHWAYS AND SHOULD BE MAINTAINED AT A CONSTANT DISTANCE FROM THE CENTERLINE UNLESS PAVEMENT WIDTH INCREASES TO ALLOW WIDER LANES.

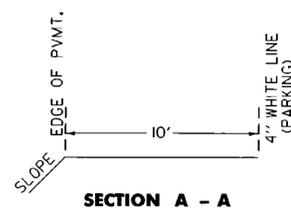
APPLY EDGE LINE AS DETAILED ON ALL PAVED CLASS 1 & CLASS 2 TOWN HIGHWAYS AND ANY CLASS 3 TOWN HIGHWAY 22 FEET OR MORE IN WIDTH.

IF MIN. 30 FOOT RADIUS CANNOT BE OBTAINED, OR THE TOWN HIGHWAY IS NOT PAVED, BREAK THE EDGE LINE USING AN 80 FOOT GAP AT INTERSECTION.

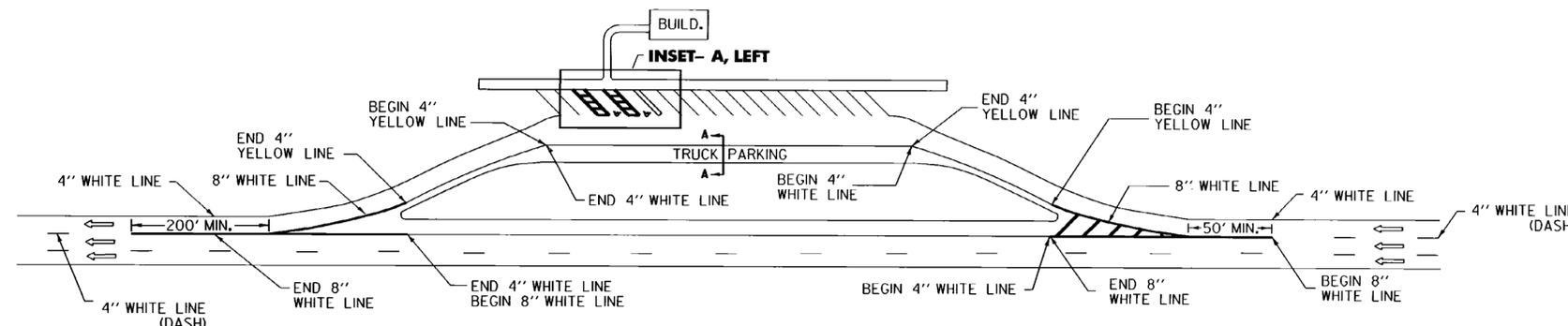
**EDGE LINE LAYOUTS**



NOTE:  
SEE STANDARD SHEET E-191 FOR  
HANDICAP SYMBOL POSITIONING AND DETAIL.



**TRUCK PARKING DETAIL**



**REST AREA PARKING DETAILS**

THIS SHEET IS  
NOT TO SCALE

OTHER STDS. E - 191, E - 192  
REQUIRED

**REVISIONS AND CORRECTIONS**

AUG. 18, 1995 - DATE OF ORIGINAL ISSUE

**APPROVED**

*Stephen S. McArthur*  
DIRECTOR OF ENGINEERING

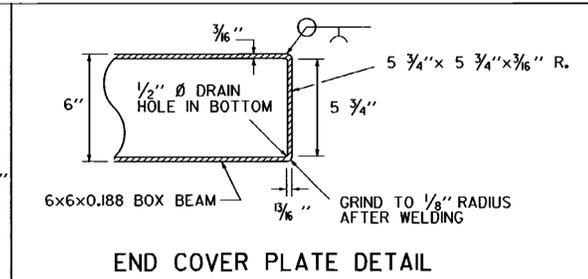
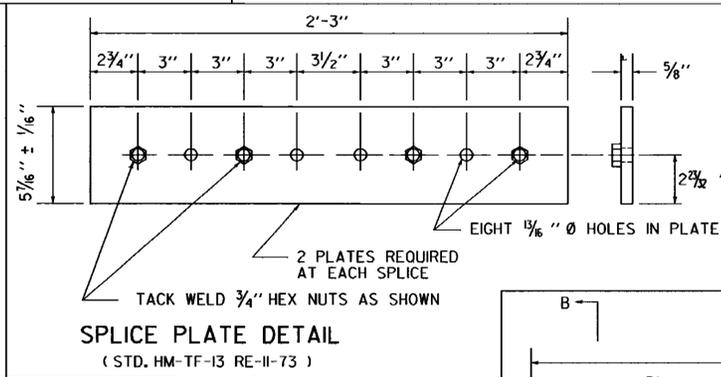
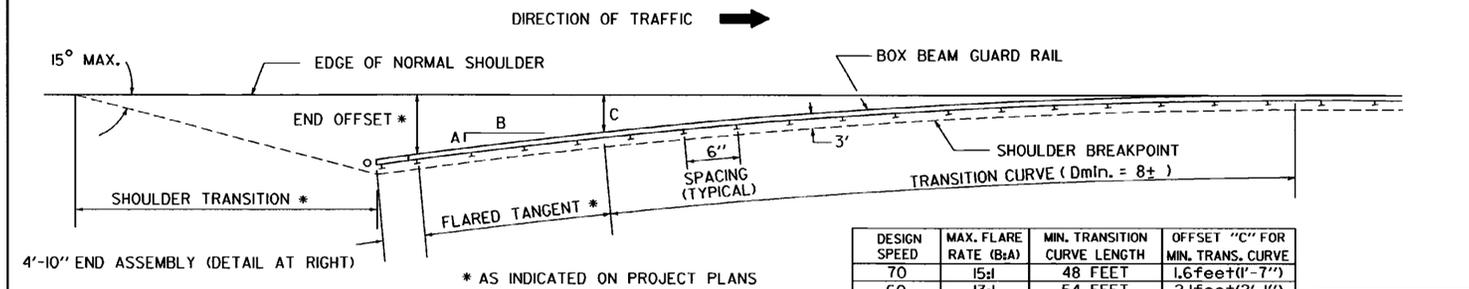
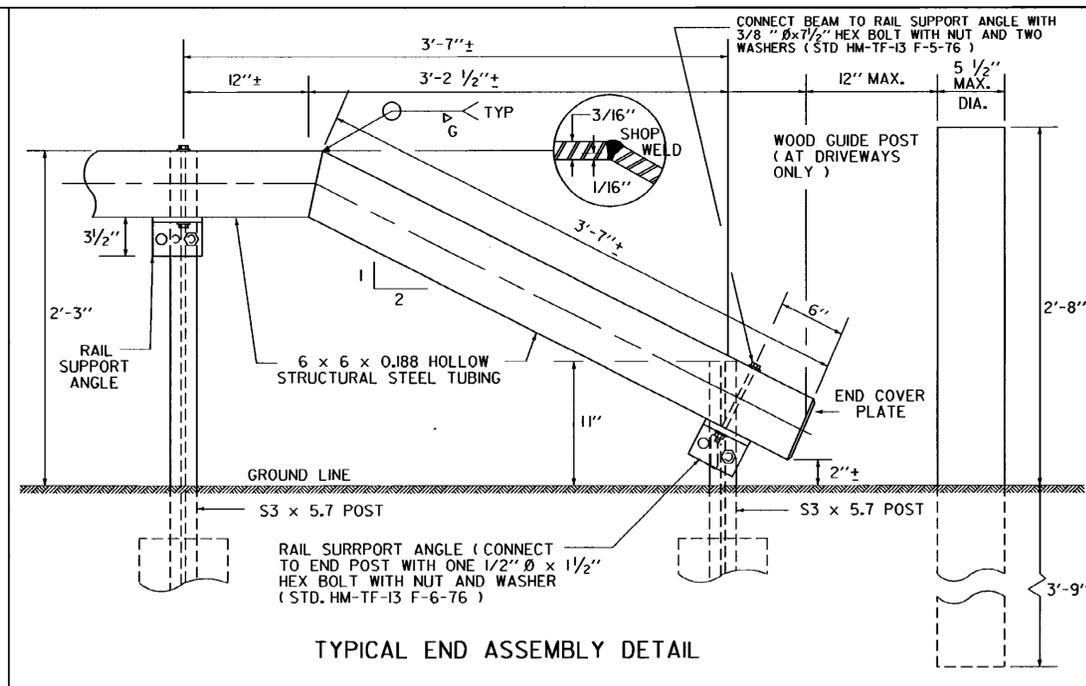
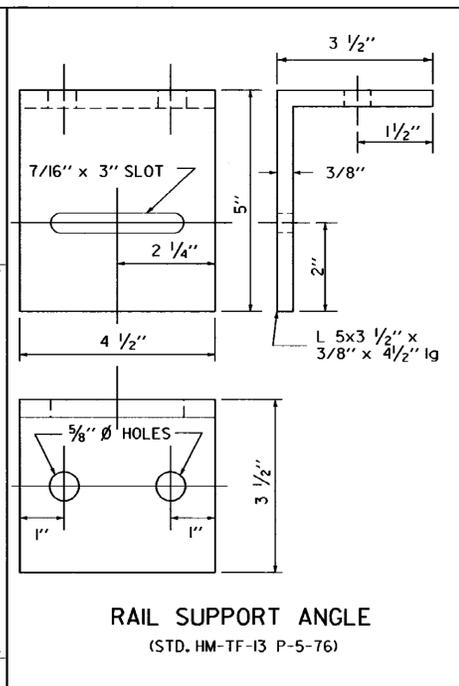
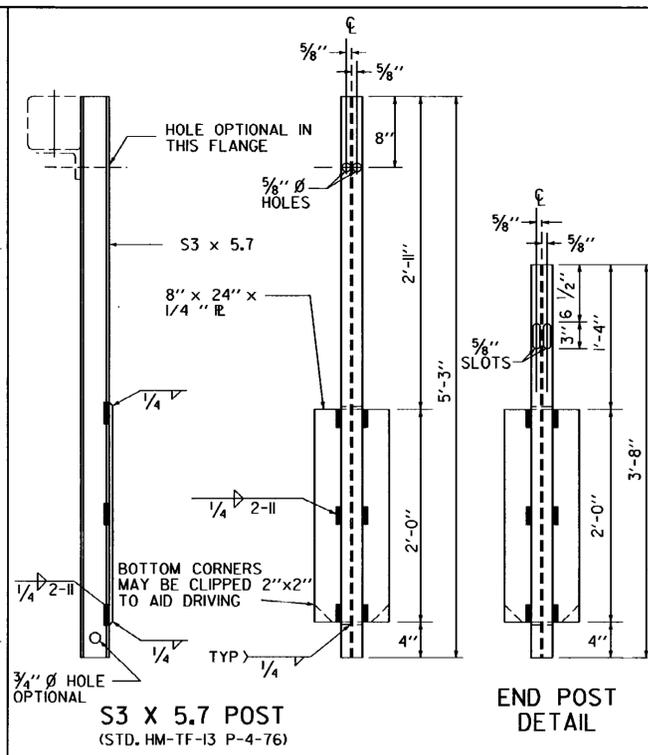
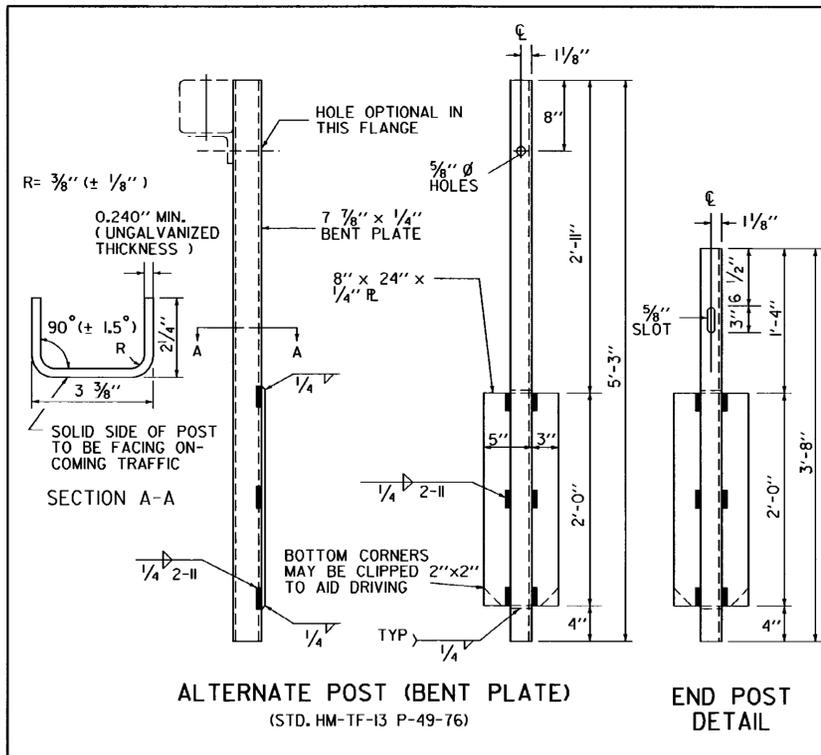
*Daniel A. Ross*  
TRAFFIC AND SAFETY ENGINEER

APPROVED FOR THIS PROJECT  
AND/OR DESIGN IMPLEMENTATION.  
FHWA FINAL APPROVAL PENDING.

**PAVEMENT MARKING DETAILS**



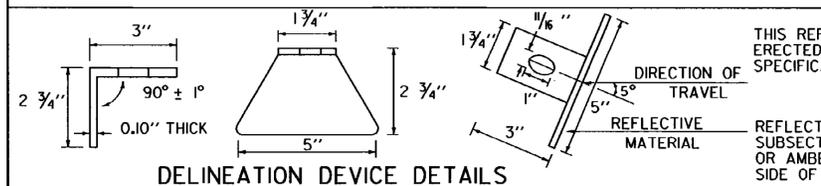
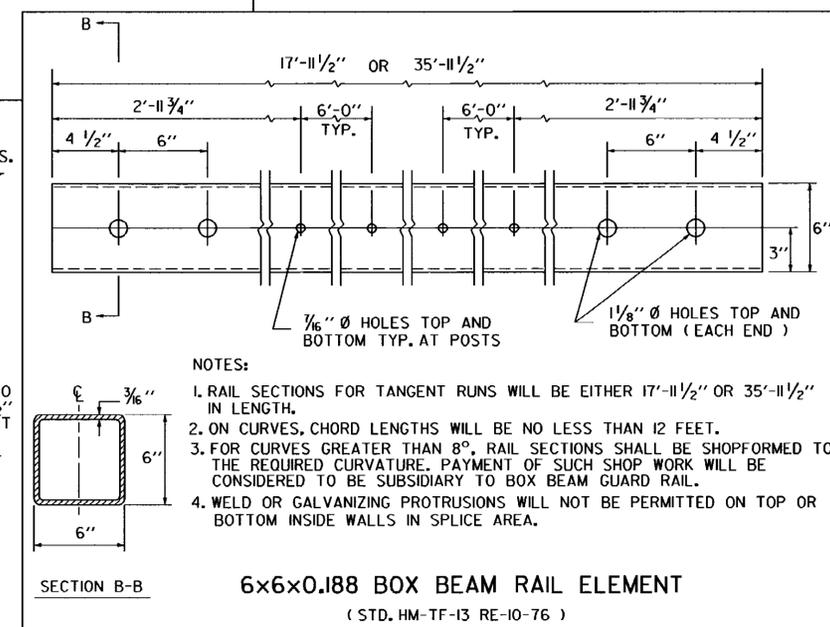
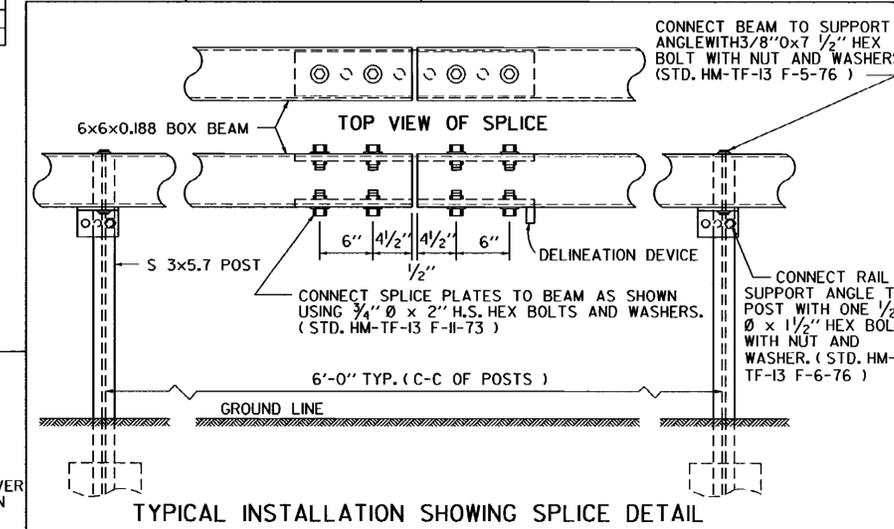
**STANDARD  
E-193**



**PLAN OF FLARED APPROACH**

GENERAL NOTES

1. THE DESIRED APPROACH END OFFSET SHOULD BE AT LEAST 8' FROM THE EDGE OF NORMAL SHOULDER WHERE SPACE PERMITS; IN SPECIAL CASES, THE END OFFSET MAY BE REDUCED. IN NO CASE, HOWEVER, WILL THE END OFFSET BE LESS THAN 4'.
2. POST SPACING WILL BE 6'-0" C-C, EXCEPT IN THE VICINITY OF THE JUNCTION OF BOX BEAM GUARD RAIL AND BRIDGE RAILING, AND AT OTHER LOCATIONS INDICATED ON THE PLANS. AT BRIDGE APPROACHES, THE 50' SECTION ADJACENT TO THE BRIDGE RAILING WILL HAVE A POST SPACING OF 4'-0" C-C.
3. FOR MATERIAL REQUIREMENTS AND CONSTRUCTION DETAILS SEE SPECIFICATIONS FOR BOX BEAM GUARD RAIL.
4. RAIL ALIGNMENT TO BE STRAIGHT AT SPLICES. NO LATERAL BENDS PERMITTED WITHIN THE SPLICE. THIS DOES NOT PRECLUDE THE SHOP FABRICATION OF BENT SPLICES.
5. THE LINE OF BOX BEAM GUARD RAIL WHEN COMPLETED SHALL PRESENT A SMOOTH AND PLEASING GRADE LINE IN BOTH HORIZONTAL AND VERTICAL PLANES.
6. ALL POSTS IN A GIVEN RUN TO BE OF THE SAME TYPE.



**REVISIONS AND CORRECTIONS**

OCT. 17, 1979- ORIGINAL APPROVAL DATE  
 JULY 23, 1980- CHANGED DIAMETER OF GUIDE POST  
 DEC. 16, 1980- INCREASED SHOULDER WIDENING FOR GUARD RAIL  
 JUNE 17, 1984- DELINEATOR DEVICE ADDED  
 DEC. 21, 1984- HEIGHT OF RAIL LOWERED FROM 2'-6" TO 2'-3"  
 OCT. 31, 1985- REVISED TO CONFORM TO 1986 SPECIFICATIONS  
 JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

**APPROVED**

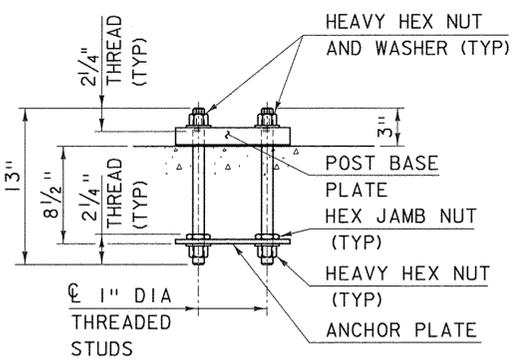
APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

*Stephen D. MacArthur, P.E.*  
DIRECTOR OF ENGINEERING

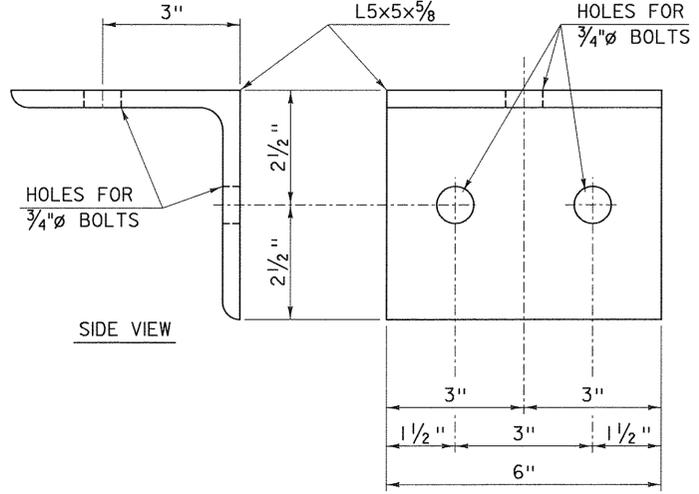
*John M. Murphy, P.E.*  
DESIGN ENGINEER

# BOX BEAM GUARD RAIL

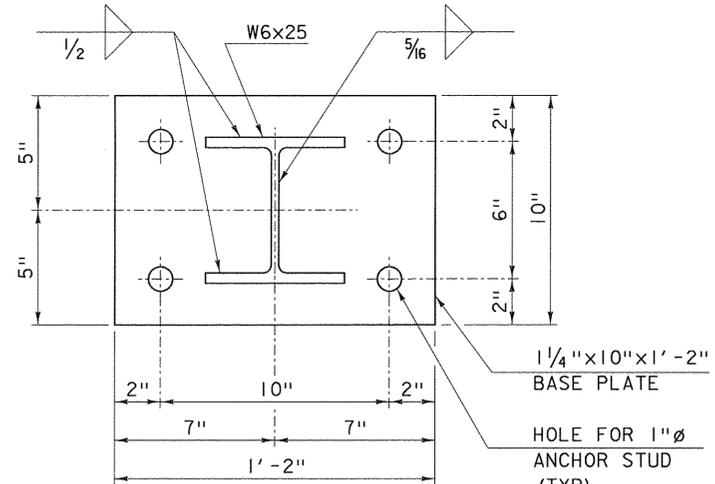




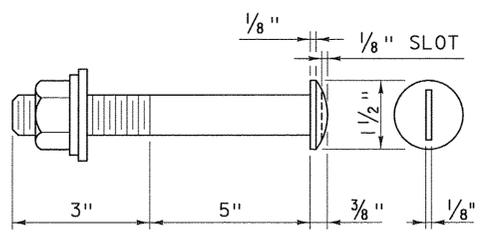
RAILING POST ANCHORAGE



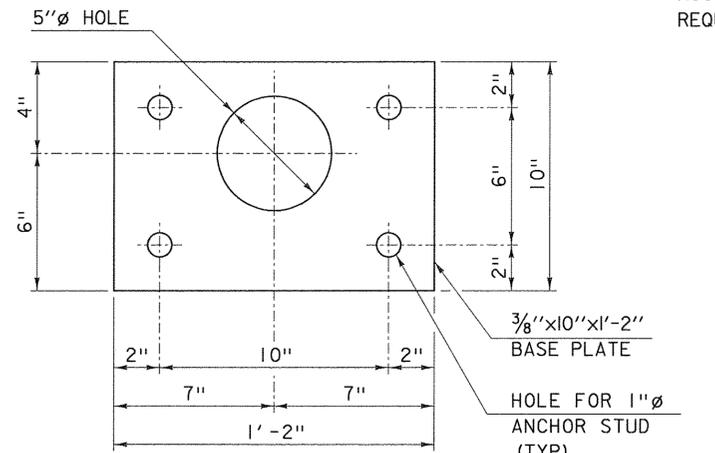
ELEVATION VIEW  
RAILING ANGLE DETAILS



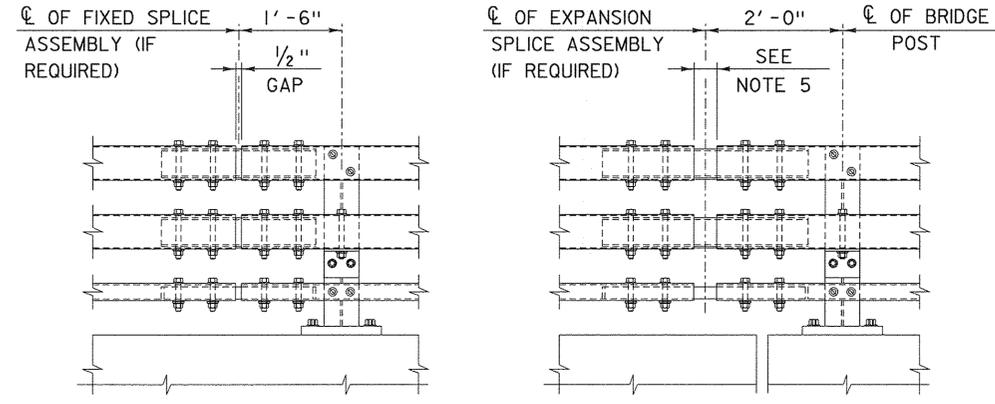
BASE PLATE DETAIL



ROUND HEAD BOLT DETAIL  
A449 (TYPE 1)

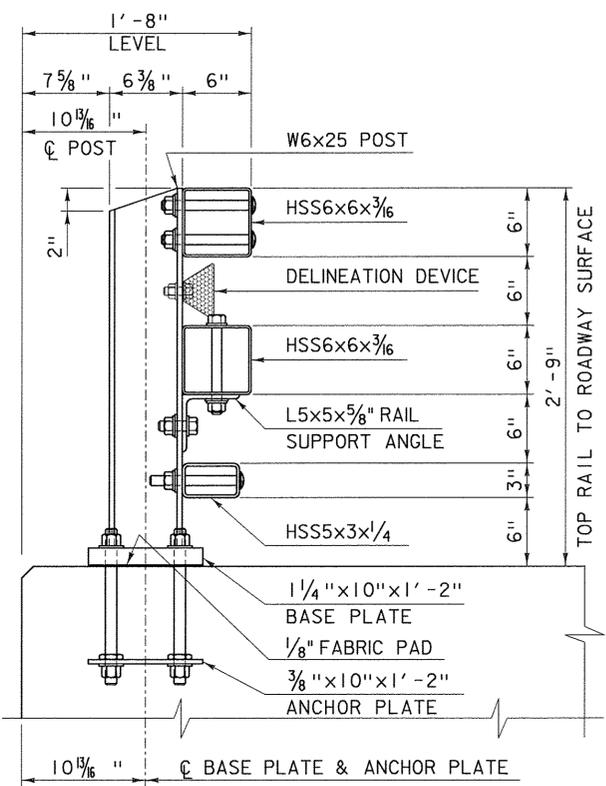


ANCHOR PLATE DETAIL



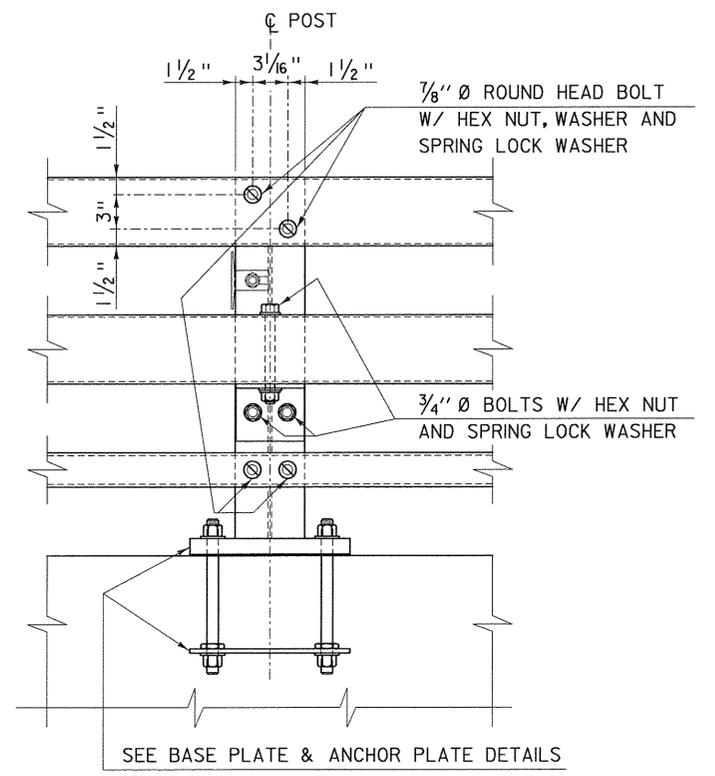
RAILING SPLICE DETAIL ELEVATION

A RAILING EXPANSION SPLICE IS REQUIRED IN ANY POST SPACING THAT CONTAINS A SUPERSTRUCTURE EXPANSION JOINT



RAILING SECTION

- NOTES:
1. ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 525.
  2. PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".
  3. ALL POSTS SHALL BE SET NORMAL TO GRADE. THE MAXIMUM CENTER TO CENTER SPACING OF BRIDGE RAIL POSTS IS 8'-3".
  4. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO BRIDGE POSTS AND PREFERABLY TO AT LEAST 4 POSTS.
  5. RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPERSTRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4" @ 68°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
  6. HOLES IN RAILS FOR TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.
  7. BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
  8. SEE STANDARD DRAWING G-1B FOR DETAILS OF DELINEATORS. A DELINEATOR SHALL BE INSTALLED AT 30 FOOT SPACING OR THE NEAREST POST. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. FOR ONE WAY BRIDGES, YELLOW IS TO BE INSTALLED ON THE DRIVER'S LEFT. PAYMENT SHALL BE INCIDENTAL TO OTHER ITEMS.
  9. ANY BENDING OF RAIL SHALL BE DONE AT THE FABRICATION PLANT ACCORDING TO A PROCEDURE PROVIDED BY THE FABRICATOR.
  10. THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS POUR, IF ONE IS USED.
  11. THIS RAILING MEETS THE REQUIREMENTS FOR A TL-4 SERVICE LEVEL.



RAILING ELEVATION

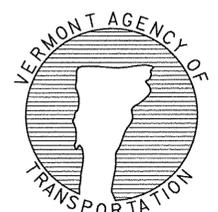
SEE BASE PLATE & ANCHOR PLATE DETAILS

REVISIONS AND CORRECTIONS  
AUGUST 9, 2010 - ORIGINAL APPROVAL  
APRIL 23, 2012 - GENERAL UPDATE 2012

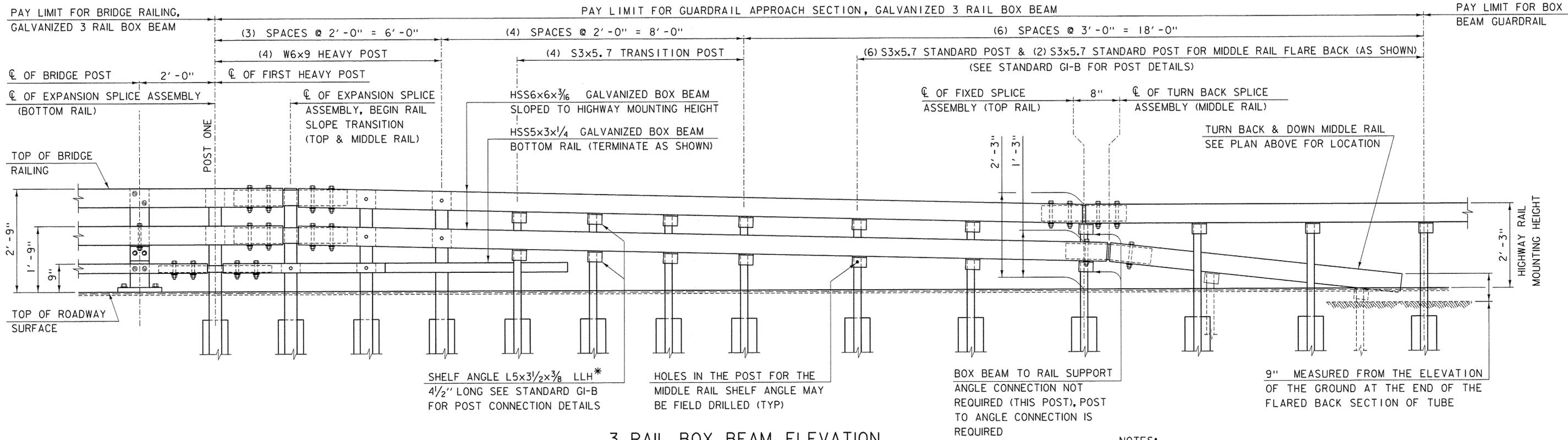
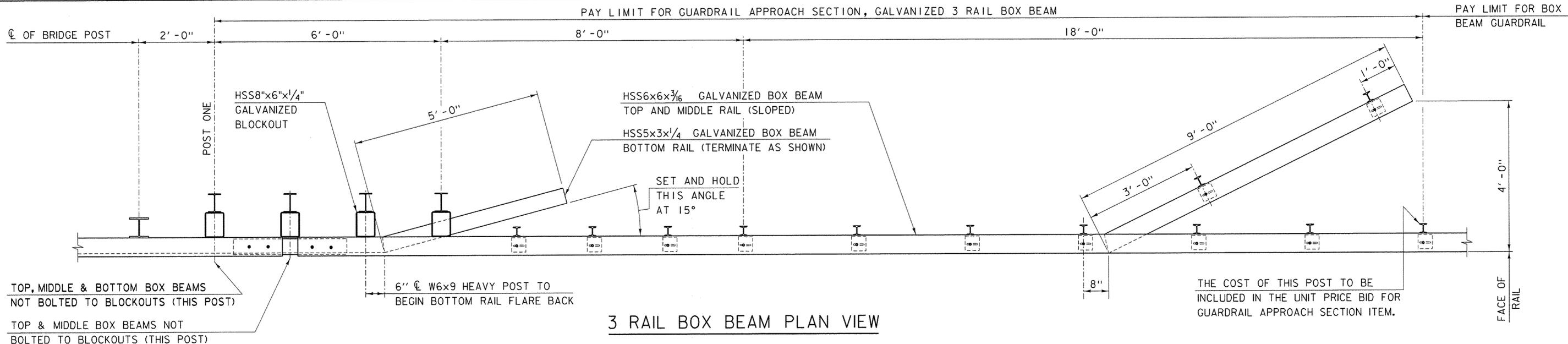
APPROVED  
*Wm. Michael Hedger*  
STRUCTURES PROGRAM MANAGER  
*Richard F. Schaub*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*Mark D. Richter*  
FEDERAL HIGHWAY ADMINISTRATION

# BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM

OTHER STDS. REQUIRED: **G-1B, S-364C**



# STANDARD S-364A



\* LONG LEG HORIZONTAL

NOTES:

1. BOX BEAM TUBE AND STEEL POST MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED.

OTHER STDS. REQUIRED: **G-1B, S-364A**

REVISIONS AND CORRECTIONS  
 AUGUST 9, 2010 - ORIGINAL APPROVAL  
 APRIL 23, 2012 - GENERAL UPDATE 2012

APPROVED

*Don. Michel Hodges*  
 STRUCTURES PROGRAM MANAGER

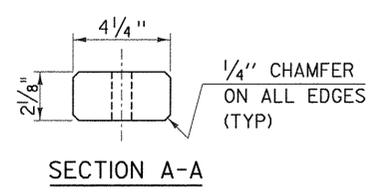
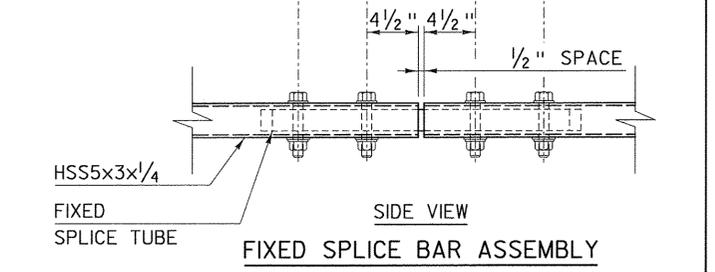
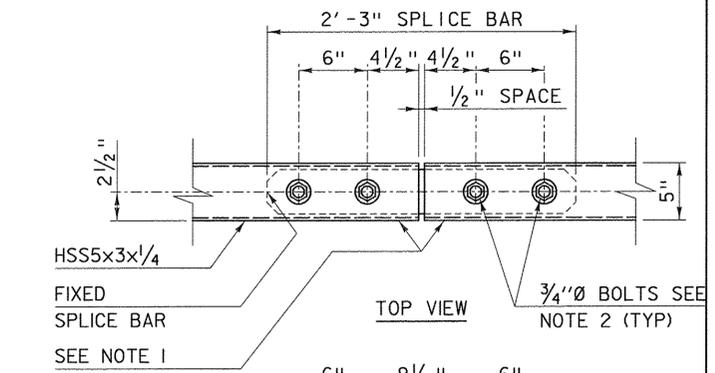
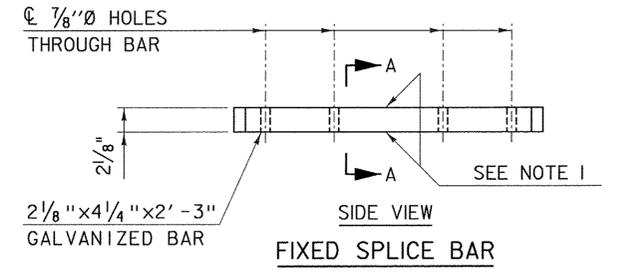
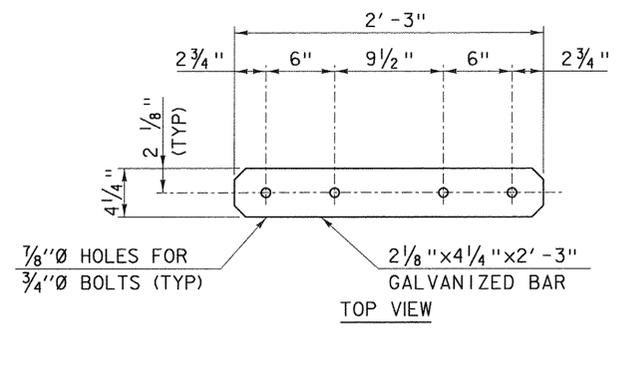
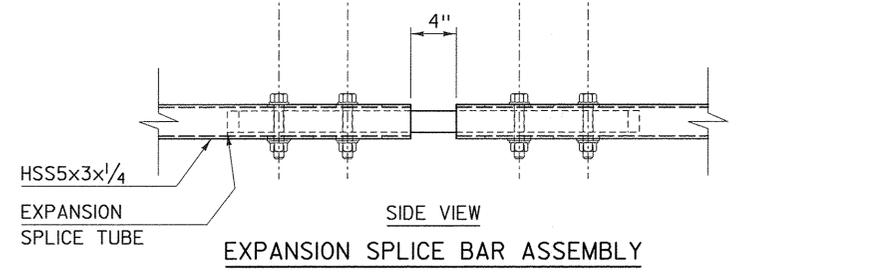
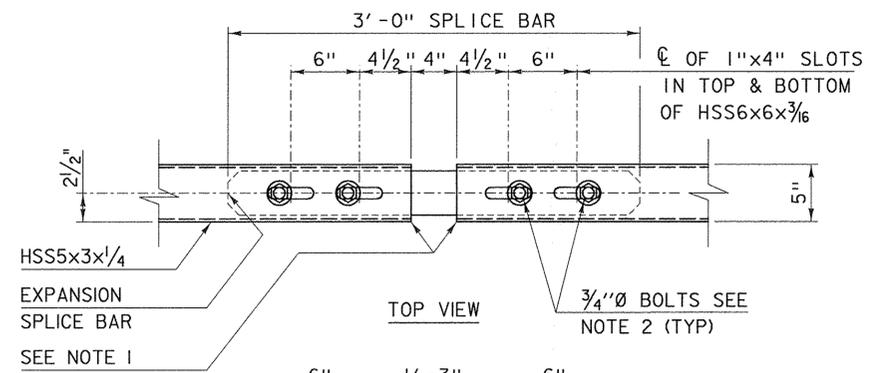
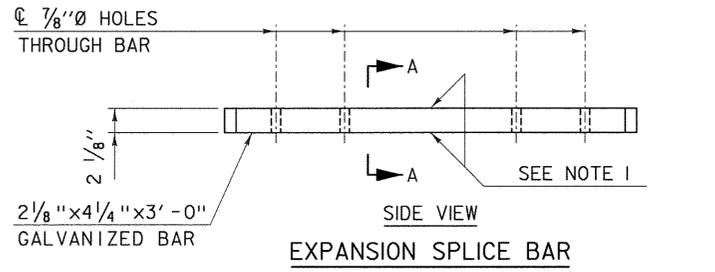
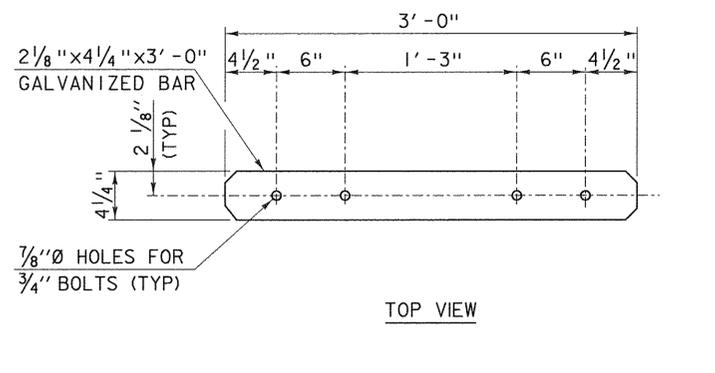
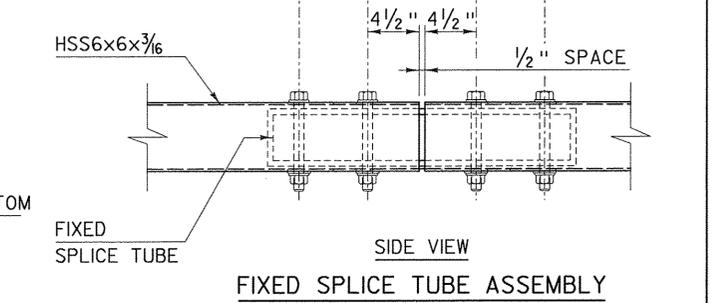
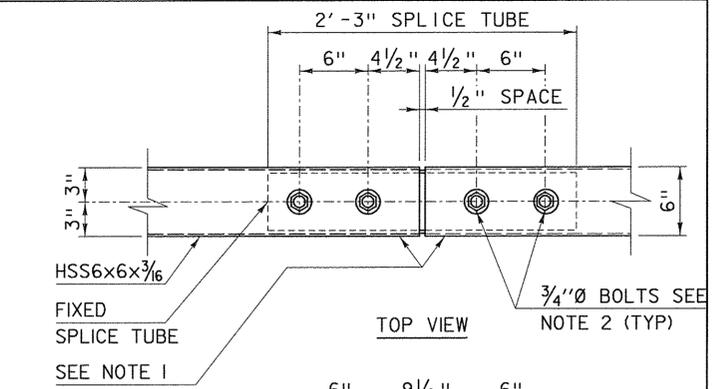
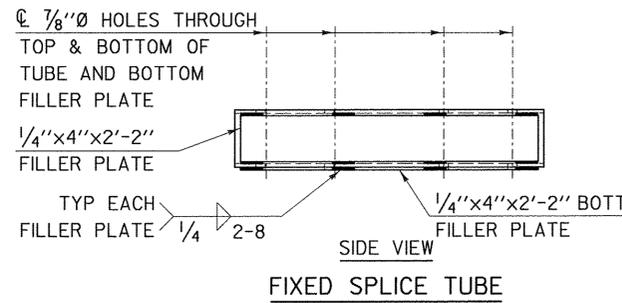
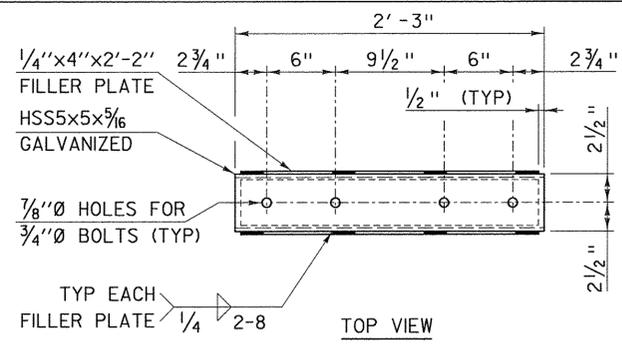
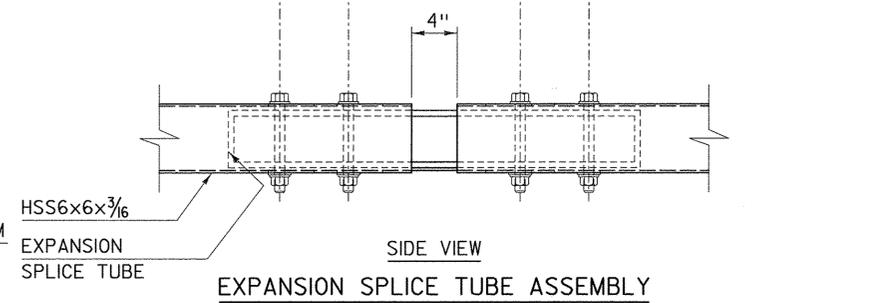
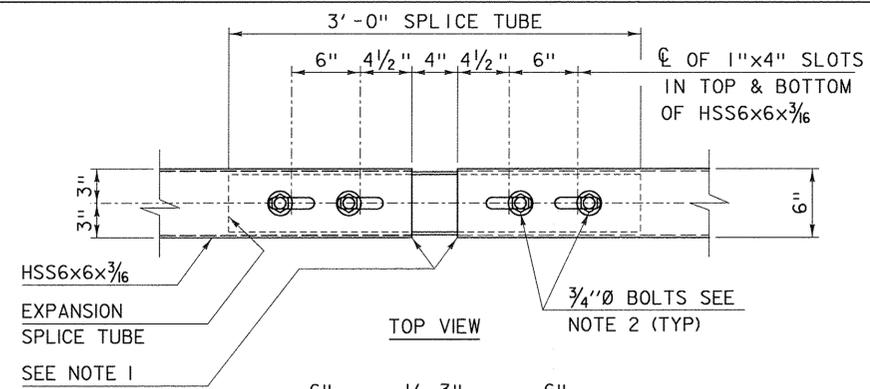
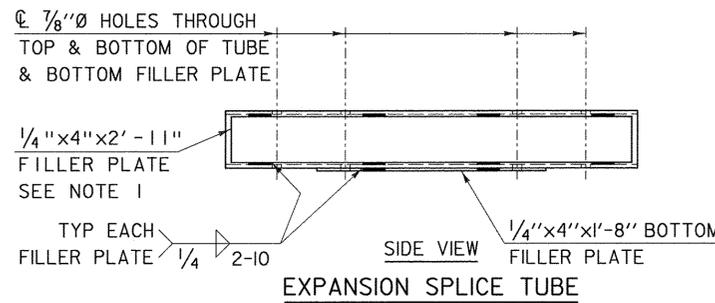
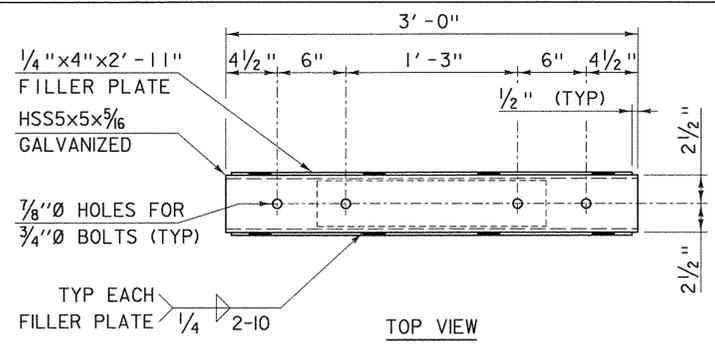
*Ruthann Tibbatts*  
 DIRECTOR OF PROGRAM DEVELOPMENT

*Mark D. Kistler*  
 FEDERAL HIGHWAY ADMINISTRATION

**GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM**



**STANDARD S-364B**



NOTES:

1. PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.
2. FOUR (4) 3/4" DIAMETER FULLY THREADED BOLTS, 7 1/2" LONG WITH TWO (2) WASHERS AND A HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT AND THE FIRST THREAD BELOW THE NUT TO BE BURRED TO PREVENT DISLODGING. FOUR (4) BOLTS AT EACH SPLICE.

REVISIONS AND CORRECTIONS  
AUGUST 9, 2010 - ORIGINAL APPROVAL  
APRIL 23, 2012 - GENERAL UPDATE 2012

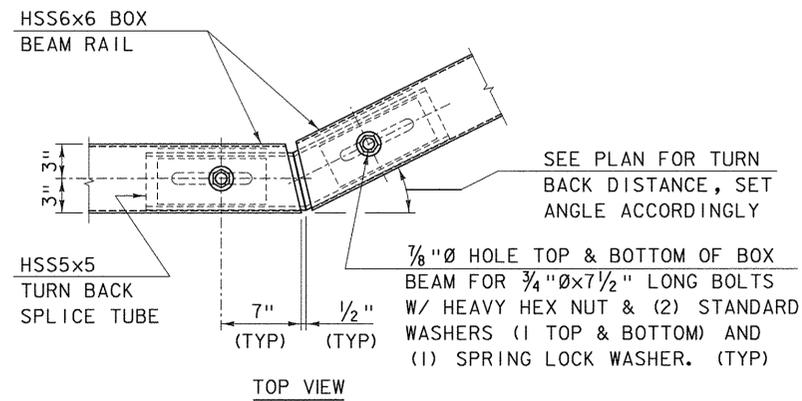
APPROVED  
*Jim Michael Hedger*  
STRUCTURES PROGRAM MANAGER  
*Richard J. Farnsworth*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*Mark D. Richter*  
FEDERAL HIGHWAY ADMINISTRATION

# GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM

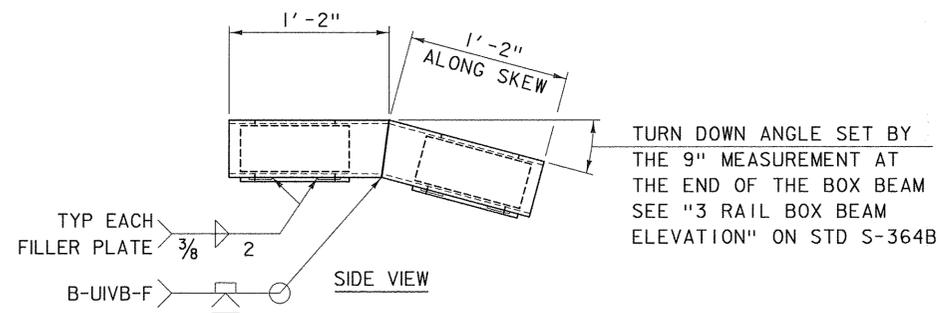
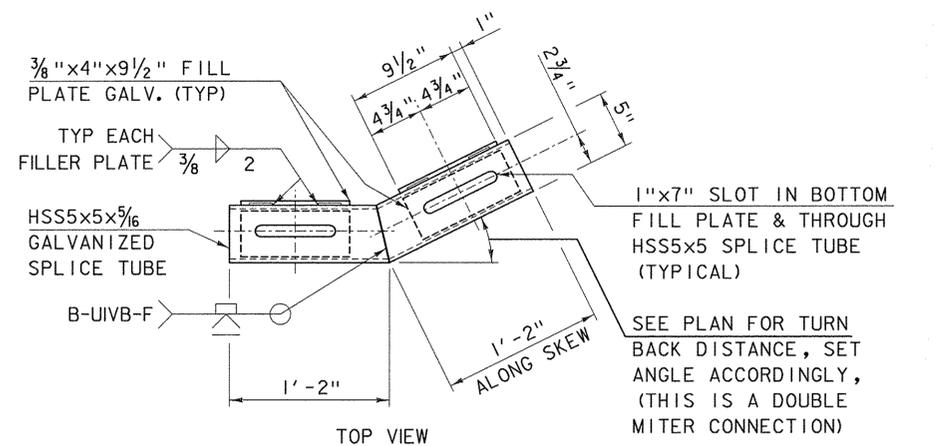
OTHER STDS. REQUIRED:



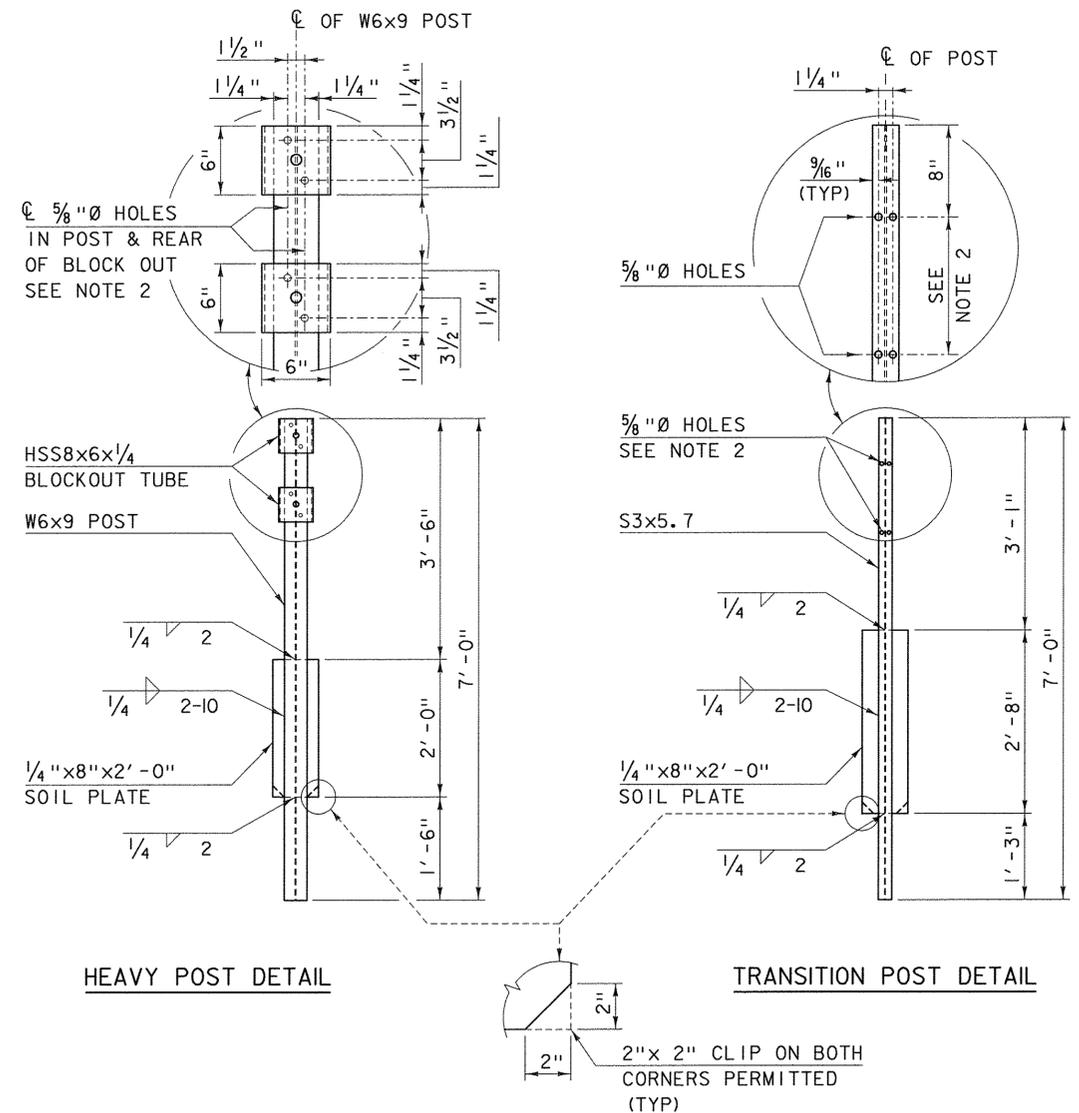
# STANDARD S-364C



TURN BACK SPLICE TUBE ASSEMBLY



TURN BACK SPLICE TUBE DETAIL  
TURN BACK & TURN DOWN TUBE JOINT



NOTES:

- PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.
- HOLES IN THE POST FOR THE LOWER RAIL MAY BE LOCATED AND DRILLED IN THE FIELD. IF SO, THE GALVANIZING SHALL BE REPAIRED IN ACCORDANCE WITH SPECIFICATION SECTION 525.

OTHER STDS. REQUIRED:

REVISIONS AND CORRECTIONS  
AUGUST 9, 2010 - ORIGINAL APPROVAL  
APRIL 23, 2012 - GENERAL UPDATE 2012

APPROVED

*Wm. Michael Hedge*  
STRUCTURES PROGRAM MANAGER

*Richard Fetsch*  
DIRECTOR OF PROGRAM DEVELOPMENT

*Mark D. Richter*  
FEDERAL HIGHWAY ADMINISTRATION

GUARDRAIL APPROACH  
SECTION, GALVANIZED  
3 RAIL BOX BEAM



STANDARD  
S - 364D